Southwestern aviation

SOUTHERN

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January, 1945
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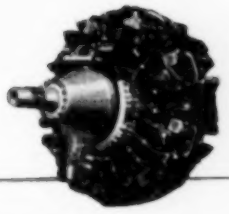

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LOWER FUEL CONSUMPTION
REDUCED MAINTENANCE

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Eleventh Year of Progress with Aviation

JANUARY, 1945 VOL. XXIII, NO. 1

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JUST AMONG OURSELVES

Editorials and Comment

IN THE BEST TRADITION

IN line with the editorial appeal we published last month on the subject of state responsibilities in aviation and the pressing need for uniformity in state aviation legislation, the recent experience of a progressive Southern state, North Carolina, sheds additional light on the timely subject and points the way to an intelligent solution to the problem for those states which find themselves without an official aviation body or adequate aviation legislation for the sound development of aeronautics within state borders.

It was during 1943 that the North Carolina General Assembly directed the Governor to appoint a commission of five members to study aviation within the state and to report its findings and recommendations to the Governor, who in turn would transmit them to the 1945 session of the state legislative body. The commission was duly appointed, held ten public hearings at various points over the state during 1943 and 1944 and completed its mission late last year. Its recommendations have just been published.

In addition to the public hearings in which all interested parties were given the opportunity to be heard and questioned by the commission, exhaustive studies were made of state aviation legislation and commissions in general, the realm and effectiveness of Federal authority, pending Federal aviation legislation, taxation, the adequacy of airports, airways and other aeronautical facilities within the state of North Carolina.

Specifically, the commission recommended the appointment of a permanent, non-paid, advisory commission on aeronautics which would be empowered (a) to promote and encourage aeronautics in North Carolina; (b) to receive Federal grants, and disburse the same to the state's subdivisions, and to co-operate with the Federal government in the furtherance of aviation; (c) to study aeronautics with a view of keeping North Carolina in the forefront of aviation.

The recommendations also included suggestions that CAA standards for airport zoning be adopted, that clear authority be granted subdivisions of the state government to exercise the right of eminent domain for condemning land for airports and landing strips and for the removal and relocation of hazards to airport approaches. They went on record for state support of a national airport program and for the extension of aviation education in the public schools.

Citing the now famous Northwest Airlines case in which the U. S. Supreme Court last year held that the State of Minnesota could impose its personal property tax on all airplanes owned by the airline, the Carolina commission had this to say:

"It seems that it would be highly confusing, and just as unfair as in the above cited (Northwest) case, for each state to regulate its own rates, taxation, safety requirements, etc. We are of the opinion that the best thing North Carolina can do for aviation at this time is not to add to this confusion."

And in regard to duplicative safety regulations, this observation is particularly revealing:

"Without exception every person questioned by or appearing before this commission was of the opinion that the present rules and regulations of the Civil Aeronautics Authority with regard to licensing of planes, pilots, safety requirements, traffic and airport specifications are adequate and sufficient. We do not believe that it would be wise for this state to add to the confusion already existing by attempting to supervise or enforce any regulations of this kind."

The non-paid commission recommended by the North Carolina advisory group can be supported on a very nominal appropriation for expenses only and will eliminate the necessity of levying a special tax. Likewise such a commission will give the state an official body that can qualify under bills pending in Congress to receive and disburse Federal funds earmarked for aviation development.

From all appearances North Carolina's proposal for shouldering state responsibilities in aviation has all the virtues and none of the vices of most state bodies charged with aviation matters. Above all, it will establish an inexpensive, modest and practical piece of machinery that can work for the intelligent growth of aviation within the state and at the same time quickly adapt itself and its decisions to the ever-changing and unpredictable course of aviation in the years to come. If, as and when aviation within the state requires a full-time, tax supported commission with an elaborate staff, the commission can create such an establishment.

We salute the aviation advisory commission of North Carolina in its wisdom and confidently hope the General Assembly will adopt the recommendations. If this comes about, North Carolina will be living up to the best traditions of her sacred soil at Kitty Hawk, where the brothers Wright solved the mystery of powered flight over forty years ago.

☆ ☆ ☆

ONE DOWN, ONE TO GO

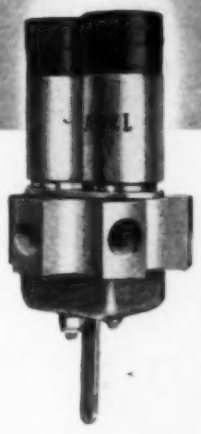
FROM time immemorial aviation has been constantly cursed with the unfortunate practice of getting certain regulations on the books under emergency conditions and then suffering under them long after the original cause for imposition has been eliminated. It is encouraging therefore to learn that section 60.95 of the Civil Air Regulations will be modified immediately, waiving the requirements for maintaining guards at designated airports and rendering airplanes inoperative when guards aren't provided. In addition the restriction that airplanes land only at officially designated landing areas has been lifted. From now on official designation is required only of airfields where planes are permanently based. An owner can now apply to the CAA for permission to land his ship on non-designated landing areas.

This is extremely good news. No one complains about the Interdepartmental Air Traffic Control Board retaining the power of designating landing areas, provided the control is limited to the approval or denial of applications purely on the basis of whether the new facility will interfere with military traffic. Removal of all other restrictions will have a beneficial psychological effect on the establishment of new landing facilities, which in turn means more civilian flying activity.

Another restriction, or rather a hangover from the early days of war

(Continued on page 12)

Open in 65/100 of one sec!



Little wonder that Boeing, famous for advanced engineering, selected ADEL's Solenoid 4-way Pneumatic Valve (No. 13381) for opening and closing the Boeing B-29's huge twin bomb bay doors. Their tests showed that electrical operation required 20 seconds for opening while the ADEL air valves (operated by compression and tiny air bottles) did the job in 65/100th of a second; similarly, closing which required 30 seconds is now done in 1.4 seconds! Add to this speed the fact that the new system affords weight savings of nearly 200 pounds plus reduced vulnerability due to solenoid operation without long bulky cables, and you'll see why other aircraft manufacturers are following suit. For complete information see nearest office. Over 500,000 ADEL hydraulic units comprising 300 types and sizes now serving aircraft, armament, transportation and marine industries. Known everywhere for Standardization, Design Simplicity and DEPENDABILITY.

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Eclipse

ELECTRONIC DE-ICER TIMER

FOR USE IN CONJUNCTION WITH ECLIPSE ELECTRONICALLY CONTROLLED MANIFOLD DE-ICER SYSTEM

Eclipse Electronic De-Icer Control Unit weighs only 6.5 lbs. —a weight saving of 10 lbs. over previous unit

Flexibility of De-Icer Control

VERY LIGHT ICING CONDITIONS—Turn switch to No. 1 position. After at least ⅛ inch of ice has accumulated on leading edges, but not less than 10 seconds after turning switch, press button and release. De-Icers will operate through one 45-second cycle and stop. Press button and release for additional single cycles when required.

LIGHT TO MODERATE ICING CONDITIONS—Turn switch to No. 1 position, wait 10 seconds, and then turn switch to No. 2 position. De-Icers will operate automatically with one-minute intervals between 45-second cycles.

SEVERE ICING CONDITIONS—Turn switch to No. 1 position, wait 10 seconds, and then turn switch to No. 3 position. De-Icers will operate automatically with no delay between 45-second cycles.

HIGH ALTITUDE—Turn switch to No. 4 position and De-Icer cycle will increase to 67 seconds, repeating automatically without delay between cycles.

APPLICATION

To effect complete ice removal by the De-Icer method, accretion of ice must be permitted to develop a tensile strength sufficient to overcome adhesion between ice and inflated boot. Accordingly, for effective ice removal, the De-Icer system must be controlled for both rate of accretion and texture of ice formation. The Eclipse Electronic De-Icer Control successfully accomplishes this.

The Electronic Timer is designed for use in conjunction with the Manifold-Solenoid De-Icer System, to open the boot inflating valves automatically, in the proper sequence, and for the effective time intervals.

PERFORMANCE

The Eclipse Electronic De-Icer Timer provides automatic or manual remote electrical control of De-Icer boot operation.

BUY MORE WAR BONDS
AND KEEP THE BONDS YOU BUY

ECLIPSE

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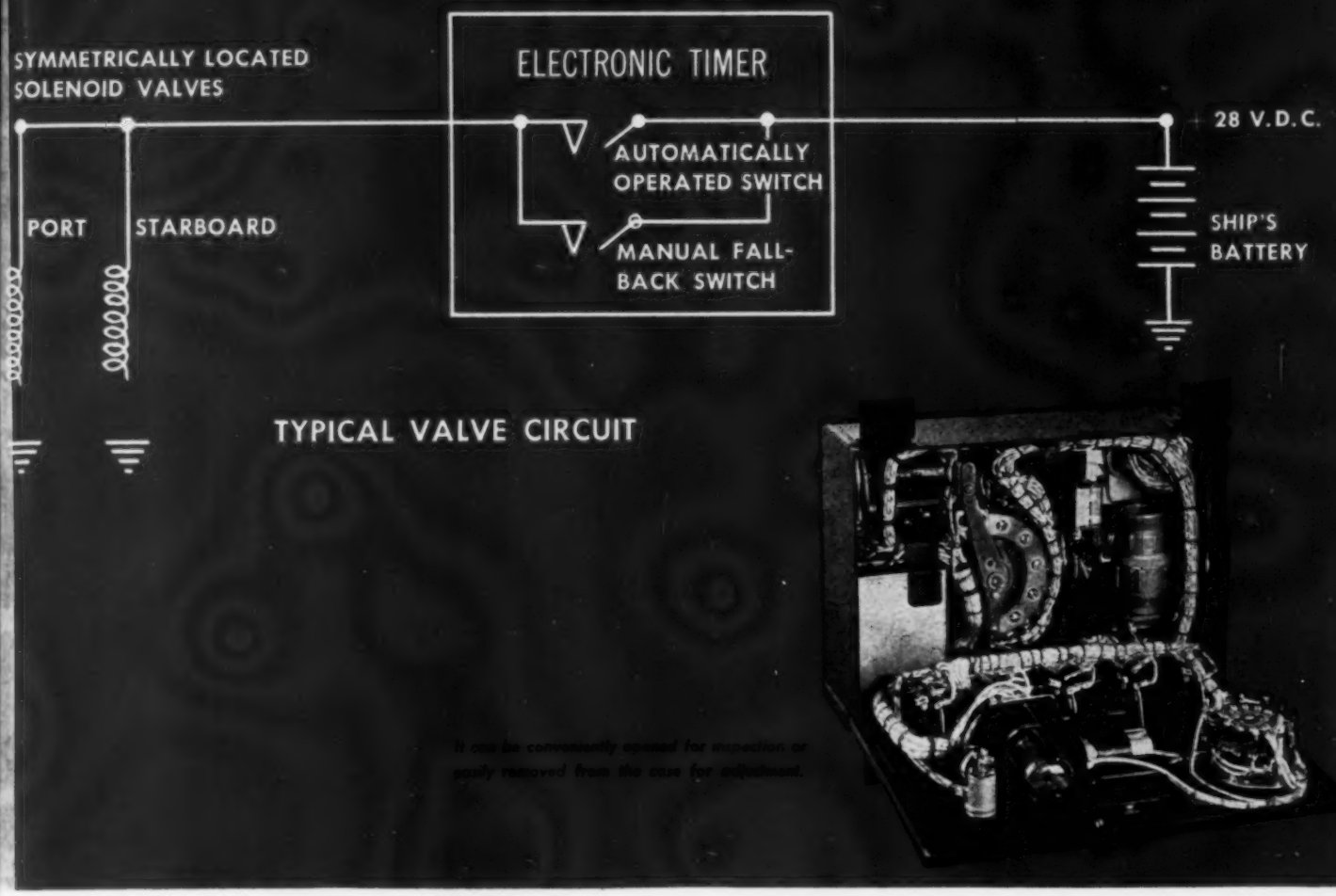

It can be conveniently opened for inspection or easily removed from the case for adjustment.

TO CONTROL THE BOOT VALVES AUTOMATICALLY IN PROPER SEQUENCE AND FOR THE PROPER TIME INTERVALS

The Electronic Timer incorporates a means of controlling frequency and duration of De-Icer operating cycles to suit any type and rate of ice formation.

This flexibility of control is provided in four different variations—"single cycle," "60 second dwell," "0 seconds dwell" and "50% increase."

Purely as a safety fall-back, a row of auxiliary hand-operated switches are provided to operate the valves directly. This switch control permits manual operation of De-Icer cells as required.

DESIGN

In the Eclipse Manifold-Solenoid De-Icer System, single span-wise suction and pressure manifolds provide a simplified, lightweight installation with negligible line losses.

Although primarily designed for *new* aircraft, any manifold solenoid De-Icer System now using the Eclipse *Mechanical* Timer can be inexpensively and quickly converted to the *Electronic* De-Icer Timer and the mechanical timer eliminated, by merely changing the AN connector on the existing cable.

Laboratory tests under room, cold, sea level and altitude conditions show that the Electronic De-Icer Timer will function, without adjustment, for more than 1,000 hours of icing time.

The Electronic De-Icer Timer can be wall or flush panel mounted. It is so designed that it may be opened for inspection from the front while in operation, or for complete removal from the case. Compact design, the unit measures 8⅞" long, 6 5/16" high, 3¾" deep and weighs 6.5 lbs.

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AVIATION ACCESSORIES

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Eclipse-Pioneer Division • Teterboro, N. J. • Los Angeles 34, Calif.

"The airplane has shriveled and shrunk distance... It quickens understanding among peoples and stimulates trade among them... It will bring the nations of the Americas closer together as its uses are more fully developed."

ERIC A. JOHNSTON
President United States Chamber of Commerce.

Here IS THE CHALLENGE

... a postwar national income which will assure the dignity of productive jobs for all!

Experts have estimated that to maintain our economy and assure full employment our nation must continue an annual national income of at least 150 billion dollars. To accomplish this the U. S. must successfully develop the full potential of its domestic and international commerce. Trade must be implemented by effective transportation.

To assist in the stimulation of commerce, Braniff Airways, Inc., and Aerovias Braniff, S. A. propose a coordinated plan of air service for the Americas. The routes planned would help to provide needed transportation among the principal productive areas and their markets in this hemisphere.

BRANIFF AIRWAYS

Over all the World today... Texas is in the Air! This war has focused attention on the ideal training ground... the beautiful rolling plains converted to airports... the fine climate attuned by nature to aviation development. In Texas are located more flying fields than in any other state; here are some of the world's leading aircraft manufacturers, contractors, service suppliers, and designers.

In this world center of aviation today, thousands of men are trained for the air from allied nations... Russia, China, France, Canada, England, Australia, and our neighbors across the border in Latin-America. Other thousands are constructing planes and components; others are guarding our coast line. And out of this clear, invigorating atmosphere will come men with new vision to lead the coming era of flight all over the globe.

Keep your eyes on Texas and the developments in post-war aviation that will come from the Lone Star State. It is only natural that the great improvements yet to come in aviation will center in Texas. In the Southern Aircraft plant at Garland, Texas, workers are still speeding Victory through production. But soon, they hope to build a new era of world progress through aircraft improvements.

ARMY E NAVY

Southern
AIRCRAFT CORPORATION
PLANT IN GARLAND, DALLAS COUNTY, TEXAS

JUST AMONG OURSELVES

(Continued from page 6)

mobilization, might well be wiped off the books. There is no good reason why the pre-war service of regular CAA weather broadcast sequences cannot be reinstated. Weather information has been off the restricted list for a long time. Many newspapers publish daily weather maps and all of them are now printing local and regional weather forecasts. Unfortunately the airman needs more specific information than that contained in these sources and there is no substitute for the pre-Pearl Harbor periodic broadcasts of up-to-the-minute weather information from the CAA airways radio transmitters.

☆ ☆ ☆

AIR FORCE LEAGUE FILLS VITAL NEED

FULL support of the public should be given to the new Air Force League, organized last month by business and industrial leaders headed by Charles E. Wilson, president of General Electric Company. It is a national civilian organization dedicated to work for permanently strong and efficient United States air power.

Americans generally realize that air force now determines victory or defeat in war. But not enough Americans recognize the contribution it can make to peace. That is where the new League will find its greatest challenge—to arouse public awareness and interest in behalf of strong peacetime air forces for the United States.

Not an issue of this magazine goes to press without some mention of almost incredible new developments in aviation. Not all such developments are robot aircraft or jet engines or rockets. Some are mere accessories and small gadgets. But nearly all of them contribute to the same goal—increased dependability for aeronautical equipment. The same perfection that will insure efficient, fast and reliable aircraft and air service in peace leads to more effective, more deadly weapons of war. Today, under wartime pressure, years of progress in aeronautical development are being compressed into weeks and months. Much of it is necessarily of secret nature, because in war the nation's welfare and security depend on such development.

If the aeronautical laboratories and proving grounds here and in the enemy's homeland were opened for public appraisal, the world would have cause to shudder over its potential to wage war in the air. But the public does not have that privilege and never will. The newest and most deadly weapons being prepared now will be introduced in action without public preview—they function best when least expected. We can only go by what has already been employed and by the guarded warnings of our own aeronautical and military leaders.

Here's what General H. H. Arnold, commander of the Army Air Forces, has said: "In the realm of national security it is certain that the impact of air power has so altered military concepts that never again shall we have the opportunity to prepare for defense against aggression which was vouchsafed us since 1940. In the years to come our first line of defense can only be in the air. From now on our security must rest, above all, upon continuing preeminence in the air, and alertness to the revolutionary developments necessary to that preeminence. In the realm of world peace no one can doubt that our preeminence in the air can and must be a major force in the maintenance of those understanding relations between the nations of our world, preservation of which must be our greatest ambition."

Because aviation's influence on peace is so far-reaching, so demanding, the time has come for widespread public awakening to its potential. That is why a civilian organization dedicated to military aviation's advancement is vitally necessary. "In my view and the view of the Army Air Forces," General Arnold has told Mr. Wilson, "there is no work more important to the future welfare and security of the country, and to the peace of the world, than the creation of public-spirited, disinterested, patriotic Americans of an organization dedicated to the purposes which you have outlined."

The pattern for American preparedness in the air is clear. We must have a strong emphasis on developmental and research work, and on every other aspect of military and civilian aviation necessary for our protection against enemies who already have begun using robot bombs and rocket aircraft against which defensive interception is virtually valueless. Adequate air preparedness has never been attained by passive interest and complacency. It will require vigorous public support, and that support can be marshalled through the civilian organization now being established by the new Air Force League.

☆ ☆ ☆

LAFE PARKS DOES IT AGAIN

DURING the five days preceding the National Aviation Trades Association annual convention in St. Louis last month, Oliver L. Parks, president of the air college that bears his name, generously provided free of charge a short but intensive course in basic aviation subjects, together with dual instruction on the school's Ercoupe, to a host of nationally-known journalists including magazine editors, work-a-day news reporters and professional aviation writers. Through the medium of this unique facility, Lafe Parks has done aviation a magnificent service that will produce priceless benefits for many years to come. His generosity is eclipsed only by his vision in making such a course available to a group of writers from whose pens will flow authoritative and enlightened aviation copy that millions of Americans will read, and most important of all, be influenced by new, refreshing copy that comes only from intimate knowledge of a specific subject.

After talking to some of the writers who accepted Parks' generosity we were deeply impressed with the thought, "What if every flying school in the nation would provide a similar short course with a little flight training to his local newspaper reporter or editor?" The profit to aviation would be incalculable. The interest in and improvement of aviation writing would be evident immediately. We can't think of any investment in aviation that can pay higher immediate dividends than the indoctrination of writers in basic aviation subjects unless it is in the field of school teachers.

Arnold Nicholson, managing editor of *Country Gentleman*, summed up the general opinion of the writers who took the Parks course in his comment: "On December first I scoffed at the idea that I could ever fly a plane solo. Now, on December fifth, I can say that I have. After the very thorough ground school course at Parks, I can say that I know something about what makes aviation a reality for the average Mr. America. Aviation is not a subject of tomorrow. It's ripe and ready today!"

Lafe Parks has done it again. With characteristic vision and calculating realism he has established another mark for others to shoot at, not in hopes for any personal gain but rather for the total good of the flying game. Why not try it in your own home town? You can't lose! ★ ★ ★

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FOR MORE FREQUENT AND FASTER SERVICE

Our new medium range Commando Silverliners will be particularly well adapted to Eastern's frequent flight schedules linking practically all principal cities in Eastern, Middle Western and Southern States.

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This selection was the result of Eastern's two years' experience, operating a fleet of Commandos for Air Transport Command on regular schedule. Under ATC direction, Eastern Air Lines pilots flew Commandos more than ten million miles, largely over water to South America and Africa.

Originally developed by Curtiss-Wright in cooperation with airline engineers as a commercial transport, the Commando with its powerful 18 cylinder Wright Cyclone Engines, meets a definite demand for larger payload, greater reliability and reduced operating costs on flights up to 700 miles in length—a range that covers over 90% of all domestic air travel. *Look to the Sky, America!* Curtiss-Wright Corporation, Airplane Division, Buffalo, New York.

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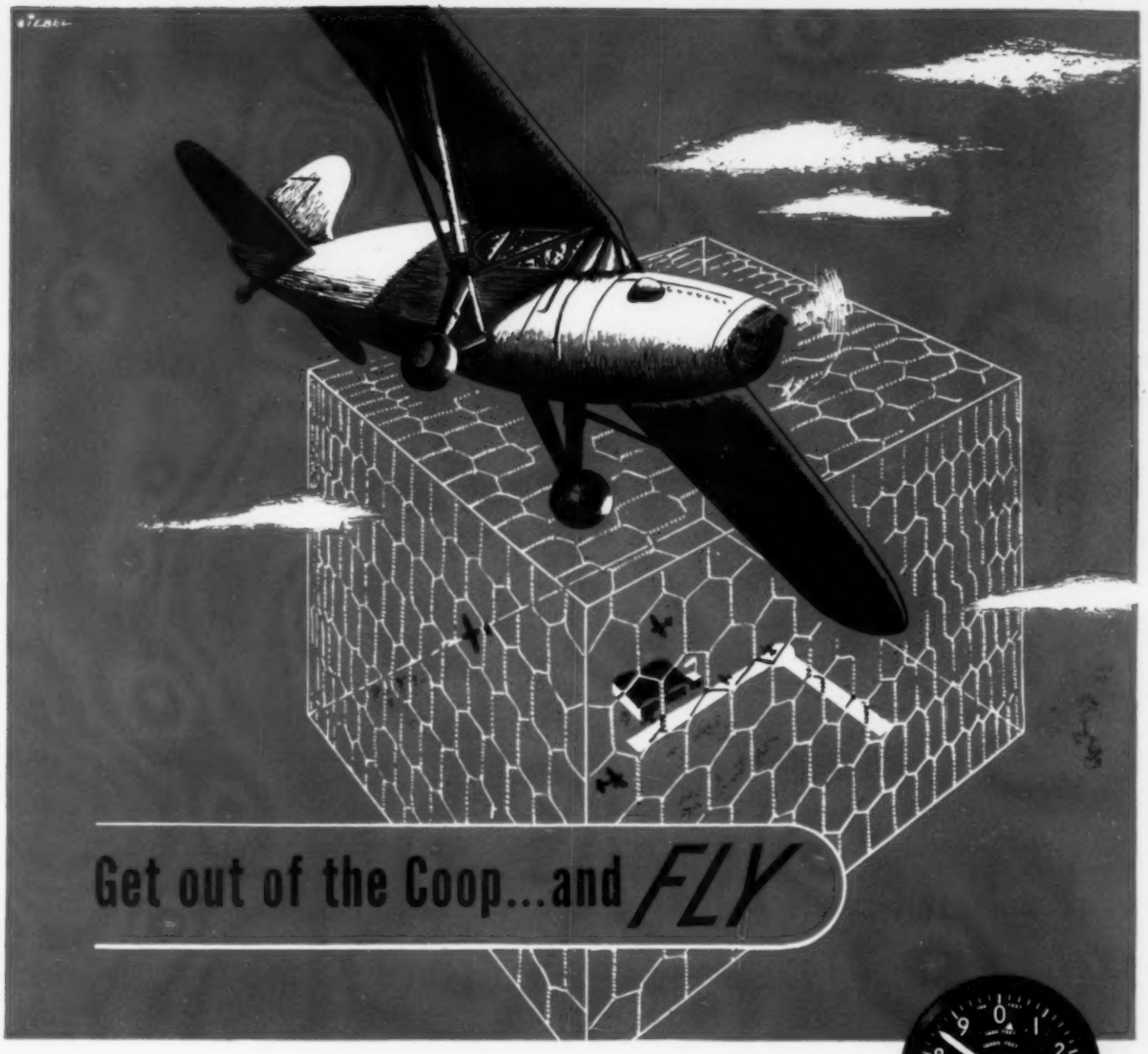

The greatest enjoyment and benefit in owning a plane lies in *going somewhere!* If lack of proper instruments—reliable instruments—keeps you cooped up in the vicinity of your airport, you're missing most of the things you own a plane for! An adequate set of instruments for cross-country flying — and, incidentally, to take you through low-visibility areas—is a small investment compared with the added usefulness they give your plane.

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This is the Kollsman Sensitive Altimeter with which most of the nation's airliners are equipped and upon which they depend for safe flying procedures. The Kollsman Instruments you'll buy for your own plane will be just as dependable.

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CECO ENGINEERING AT WORK IN WAR AND PEACE

PENNIES PROTECT MILLIONS

Protek-Plugs · · the Modern Moisture Removal Method

It began with aircraft engines. Once, it took many hours to remove the grease that was necessary to protect the cylinders of engines in transit.

Today, Protek-Plugs are removed from the spark plug openings, the spark plugs are installed, and in minutes, the engine is ready for service.

Protek-Plugs are hollow, transparent plastic containers, filled with Silica-gel, a material practically chemically inert, with a tremendous capacity for water. They remove corrosion-producing moisture from the cylinder walls by adsorption. When the Silica-gel approaches saturation, the plugs signal "Danger" as their color changes gradually from bright blue through violet to pink. The spent plug is then replaced with a fresh Protek-Plug.

Protek-Plugs are at work today by tens of thousands, not only in aircraft engines, but in delicate mechanisms of all kinds. There is ample proof of their value from every battle front. Costing pennies, they guard vital war equipment worth millions.

Tomorrow, this war-born product will protect more than the engines of aircraft in transit and in storage. It will find dozens of other jobs guarding the commerce of peace from moisture damage. Write for our illustrated booklet on Protek-Plugs.

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CHANDLER-EVANS CORPORATION SOUTH MERIDEN, CONNECTICUT, U. S. A.

The Birdmen's Perch

By *Major Al Williams*, ALIAS, "TATTERED WING TIPS"
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.

Hey! Wait a minute!

At the rate you're sending in Little Known Facts About Well Known Planes, there'll soon be more Perch Pilots than there are in the Services! We're going to commission a whole squadron of you fellas this month—but we warn you . . . from now on it's going to be a lot tougher.

From now on, your Little Known Fact is going to have to be really *hot* to get you a commission as a Perch Pilot (bottom rung). It'll have to be so interesting and unusual that we gasp for at least two days. If they're that good, you can still become a Perch Pilot (br) by sending them to the above address. And you can still get a promotion to Senior Pilot by sending *five* good-enough-to-print "Facts."

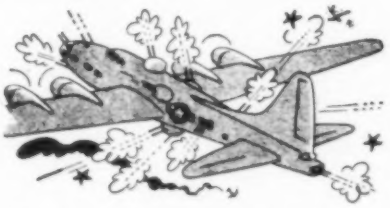
L.K.F.A.W.K.P. Dept.

"The Mosquito is one of the fast Medium Bombers who could fly on one engine!" (That's what he said!) Pierre-Andre Robitaille, Quebec, Can.

"The largest airplane ever to fly from Europe to America was the German Dornier DO-X. But it had American engines (P&W) and an American pilot!" Maynard Penick, Laredo, Texas.

The Alchlor Process is an additional refining step which removes additional carbon-making and sludge-forming hydrocarbons from Gulfpride!

"A one-bladed propeller (with counterbalance) is more efficient than two, three, or four-bladed designs!" R. P. McComb, Mgr. Auburn Airport, Auburn, Ind.



"The B-40 (no longer in operation) was a B-17 which carried many extra guns in lieu of a bomb load. It was used to escort and protect bomber formations!" James Edgar, Little Valley, N. Y.

"The 141,000-lb. weight of the B-19 rests on tires only ¾" thick at the side walls!" Howard Coleman, CAP Communications Officer, Santa Monica, Cal.

"Perch Pilots using anything other than Gulf Aviation Products will be demoted, shot, kicked, stabbed, and sneered at!" Flutter, the Oily Boid, Pittsburgh 30, Pennsylvania.

"The B-29 is the first plane to have twin turbo-superchargers on each engine!" John W. Pelka, c/o Dormitories, Hazelton Branch, Rome Post Office, Rome, New York.

"The P-59 A (jet-propelled) operates so smoothly that a vibrator had to be installed on the instrument panel to keep instrument needles from sticking!" Perry Young, Refugio, Texas.

"Any airplane engine operates smoothly when it's in proper adjustment—and full of that Good Gulf Aviation Gasoline!" The Gulfhawk, c/o Major Al Williams.

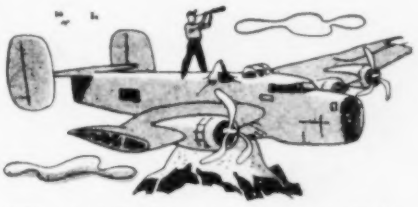
"Two Stinson 'Flying Jeeps' actually flew the hazardous 'Hump'! Some passes were so narrow they had to fly single file!" Edward Bill, Jr., 19 Chestnut Ter., Newton Centre, Mass.

"If every gun on a B-29 were fired continuously for 1 minute, a total of 8800 lbs. of ammunition would be expended!" A/S Edward Kaplan, Section I, 2531 AAFBU, Pampa Air Field, Texas.

"Over 15,000 different airfoil shapes have been tested in the world's laboratories!" A. C. William Rohlf, Jr., Group E—Wing I, Class 45D, SAACC—Preflight, San Antonio, Tex.

"A poor engine and poor oil are poor partners. A good engine and poor oil are not much better. But a good engine and Gulfpride Oil are perfect partners! And Gulfpride will keep the engine good and perfect!"

"No B-29 gunner actually touches his guns! They are all remotely controlled!" PFC Warren Glenn, Chaplain's Dept., Sioux Falls, South Dakota.



"Wrecked B-24's are used as control towers in some parts of the Pacific!" Clifford Custin, Jr., 1175 East Condit Street, Decatur, Ill.

"Replacing planes no longer fit for combat duty (like the one above) may run into millions of dollars for a single squadron in a single month! So buy that extra War Bond today!" Uncle Sam, Washington, D. C.

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OIL IS AMMUNITION—USE IT WISELY

IRVIN Air Chute

"SINGLE-RELEASE" Harness

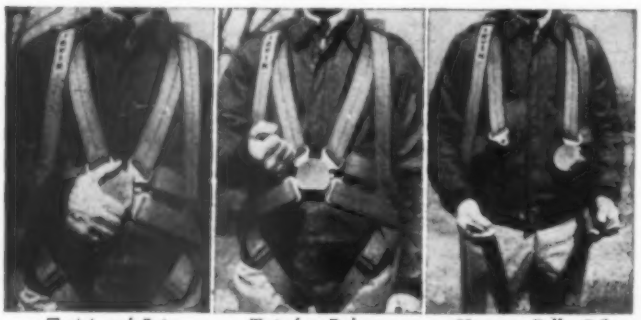
UNITED NATIONS' FLYERS

are using it for

SAFER LANDINGS

A one-hand turn and a tap on the single frontal disk instantly releases the harness . . . leaving the flyer entirely free. Accidental release is impossible before disk is "set" for action.

All United Nations' Air Forces for years have used IRVIN as standard equipment . . . and now the Irvin "Single-Release" harness is acknowledged as superior for all landings. IRVIN, as always, leads in Safety.



Twist and Set *Tap for Release* *Harness Falls Off*

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Main Office: 1670 Jefferson Ave., Buffalo 8, N. Y.

Complete Factories in Buffalo, N. Y., Glendale, Calif. (1500 Flower St.), and Lexington, Ky., U. S. A. . . . Canada, England and Sweden . . . All Serving the United Nations' Air Forces.

BUY MORE WAR BONDS

AIR REPORT

☆ SIGNIFICANT TRENDS IN THE NEWS

Quick Action in CAR Revisions

As predicted in these columns previously, simplified and condensed civil air regulations affecting private pilots probably will be adopted by the Civil Aeronautics Board early in 1945. The Safety Bureau was to present its modifications to Parts 20, 43 and 60 the first week in January and unless unforseen objections arise the revisions should be adopted and made effective from sixty to ninety days later. Realizing that most of the unsafe practices which result in accidents stem from pilots' disregard for common horse sense, the Safety Bureau has placed the burden of safe flying on the pilot with a "reckless flying rule" which will bring down the wrath of the gods on his head if he jeopardizes the lives or property of other people. Minimums covering proximity in flight, altitude over congested areas and aerobatics over congested areas have been maintained. Minimum standards regarding knowledge, experience and skill will be lowered considerably, reflecting the new official attitude that you don't have to be a "superman" to hold a private pilot certificate. All in all, the revised sections of CAR, if adopted, bode well for non-scheduled flying, promising, as they do, less book and paper work, less precision in flight maneuvers and less technical aeronautical knowledge.

★ ★ ★

NATA-ATS Merger Talked

Although no attempt for consolidation was made, considerable unofficial discussion took place during the St. Louis NATA Convention last month on the subject of the Aeronautical Training Society and the National Aviation Trades Association working out a merger. Observers close to the inner circles of both organizations believe some behind-the-scenes effort will be made early this year toward that end. While NATA is outspoken in their desire to bring in all non-scheduled operators, the ATS folks are non-commital but willing to discuss the matter. A few more far-sighted individuals would like to see all colleges and universities engaged in non-scheduled flying activities also brought into the fold, which would, in their opinion, add considerable prestige and political strength to the non-scheduled civil aviation front.

★ ★ ★

3-Cent Air Fares Coming

Promises of lower airline fares are more realistic than they might appear. Higher payloads through increased aircraft size and increased efficiency, both aerodynamically and in horsepower, already have cut direct operating costs. Considerable cost reduction will result from use of gas turbine power plants, which will cost less, require less maintenance, provide more efficient streamlining and weigh less than reciprocating engines.

★ ★ ★

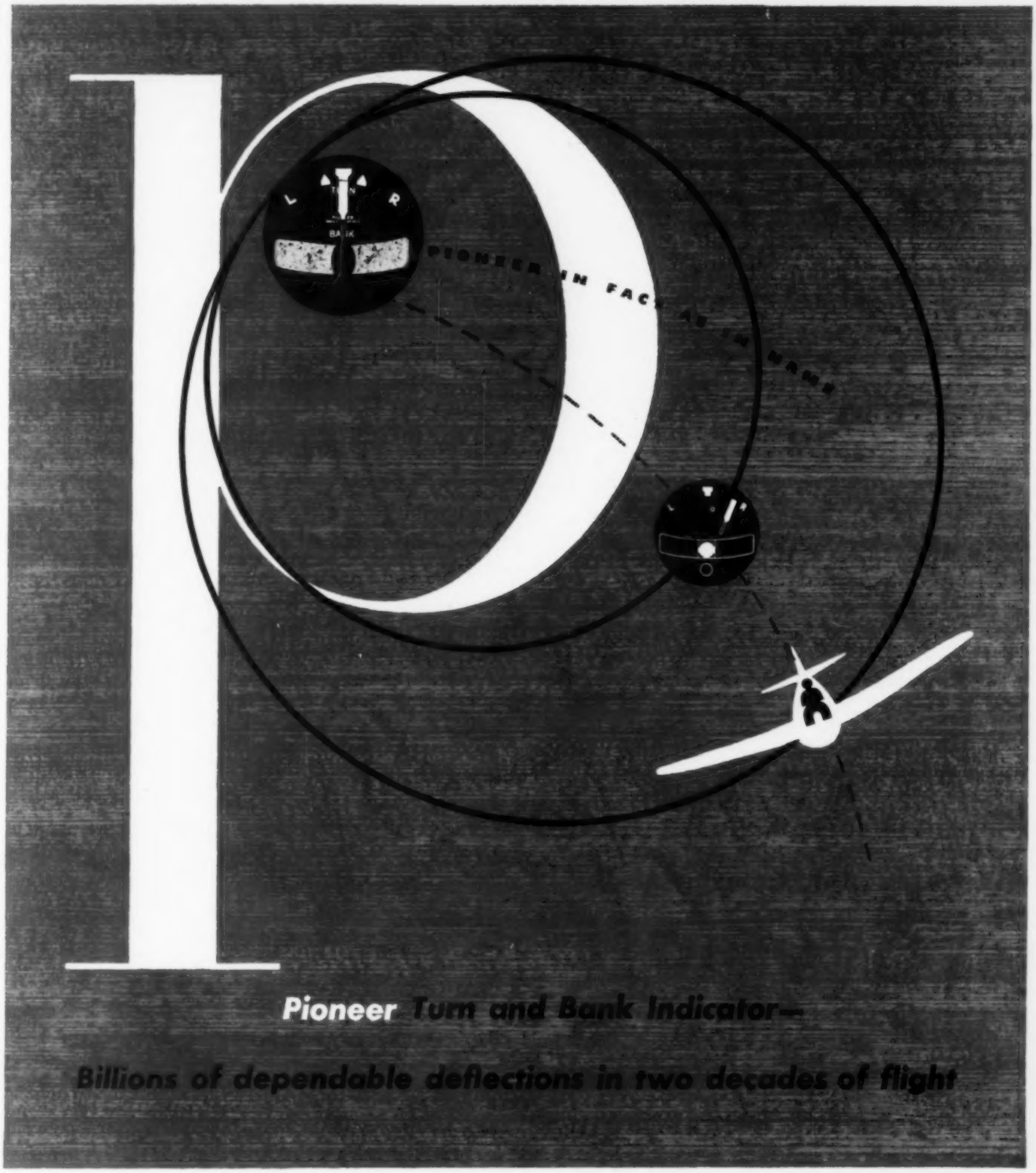
B-29's, B-32's in Europe?

They were designed for and are being produced on schedules dovetailing with the war against Japan, but a further delay in Germany's defeat might force the switch of some B-29's and B-32's to the European theatre. Troops, tanks, guns and ships won't be diverted from Pacific fronts to the Rhine, but air power's extreme mobility is ideal for such a swap. Moreover, B-17 and B-24 output has been materially cut, and continued heavy aerial offensives might force use of the supers across the Atlantic.

★ ★ ★

Lower Insurance Becoming Actuality

Indicative of the trend toward relaxation of penalties imposed by life insurance companies on policyholders who fly is a recent announcement of one company who has



A Pioneer "first" we are particularly proud of is the Pioneer Turn and Bank Indicator. Almost twenty years ago the first turn and bank indicator was manufactured and sold by Pioneer. This sturdy member of the Pioneer primary flight-security group has provided steadfast indications of rate of turn and lateral stability for hundreds of thousands of pilots throughout the world. Its rugged design and close-tolerance calibration have meant dependable readings through literally billions of pointer deflections, earning the admiration of flying and service personnel everywhere —another tribute to the Creative Engineering-plus principle which guides Pioneer.

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decided to cut extra premiums to the following levels:

Non-scheduled commercial pilots: Pilots operating company-owned planes for business purposes only where the pilot's qualification, type of plane, annual flying time and terrain are comparable with those of commercial airline pilots, annual extra premium $7.50 per thousand for full aviation coverage.

Other professional pilots: Pilots making charter flights, acting as instructor, operating sightseeing planes, photography, etc., average annual flying time 50 to 100 hours, annual extra premium $10.00 per thousand. If average annual flying time is 101 to 200 hours annual extra premium is $15.00 per thousand. Over 200 hours average flying time, annual extra premium 8c per hour per thousand dollars.

Private pilots: Pilots holding a private certificate or higher rating who have at least 100 hours solo experience and who fly only licensed planes in accordance with the following schedule:

	Annual extra per thousand	
	100 to 200 Solo	400 or more Solo
Annual Time		
25 to 74 hours	$10.00	$ 7.50
75 to 124 hours	12.50	10.00
125 to 199 hours	15.00	12.50
200 and over	17.50	15.00

Student pilots annual extra premium $25 per thousand. All cases listed above, including student pilots, maximum amount of insurance allowed is $10,000.

For non-scheduled passenger flying, the following schedule holds:

Purpose of Flight	Annual Flying Time of Passenger	Maximum Amount of Insurance	Annual Extra per $1,000
Business trip in Company-owned plane	50 hours or less	$10,000	Standard
	51 to 100 hours	10,000	Standard
	Over 100 hours	10,000	2c per hour
Charter Flying	50 hours or less	$10,000	Standard
	Over 50 hours	10,000	4c per hour
Private business or pleasure if pilot holds Airline or Commercial certificate	25 hours or less	$ 5,000	Standard
	Over 25 hours	5,000	4c per hour

Experimental test pilots, crop dusters and military pilots are not considered for aviation coverage.

Pilots of commercial airlines or members of the crew flying anywhere in the western hemisphere (North America, South America, Central America, West Indies and Bermuda) limit $10,000—annual extra premium $7.50 per thousand for full coverage, but with War Risk Exclusion Rider.

Pilots of commercial airlines including members of the crew employed by domestic airlines who fly trans-oceanic routes to and from the United States or Canada limit $10,000—annual extra premium $15.00 per thousand for world-wide full coverage, but with War Risk Exclusion Rider.

★ ★ ★

Feeder Costs Belatedly Affecting Bids

Although the rush by hundreds of applicants seems to indicate a general unawareness on the matter of expense attached to establishing an airline, some of them are learning how costly it is to select a route, hire an expert or two to draw up their briefs, travel to and spend days in Washington, journey to far-off cities for hearings, maintain special legal counsel, etc. Most recent evidence of discouraging costs developed last month when an experienced operator withdrew a promising application for feeder service in the Southwest. He had thought of starting with airmail and air express pick-up only, for which the outlook was unusually good. But months of investigation proved it would also be necessary to carry passengers. The difference in equipment costs was great—three or four times the originally-planned investment. So the operator, who also had applied for service elsewhere, pulled in his horns. But the fact remains that the service he had planned is badly needed. Undoubtedly there are many other such cases, most of them yet to reach the turning point. Eventually some will come through, but the costs—and much of them is unnecessarily high—will prove to be more of a factor than is generally realized.

★ ★ ★

ARE YOUR PLANES READY TO FLY?

We are equipped to do your Overhaul Job, both Aircraft and Engine, in the same shops which have turned out our own planes.

Expert workmanship assures you of top-notch appearance and operation when the aircraft is returned. Our men are especially skilled and experienced in revitalizing war weary planes.

Southeastern's OVERHAUL BASE at the Athens, Georgia, Municipal Airport is centrally located to handle all types of aircraft and engine work for the southeastern states. We can arrange to pick up and deliver within a 500 mile radius.

Inquire about our stock of surplus parts, engines and parachutes.

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THE Sky's the Limit

BY BILL GREEN

The war is far from being won. . . . Over-optimistic Americans are losing the opportunity to win quickly. . . . Air power needs support of civilians. . . . Small plane production would increase war output by solving transport problems.

Aviation and the War

THIS column has avoided arguments as to which is the best arm of the military services. We have maintained for a long time that it took all arms of the service, working in the closest collaboration, to win any war. This is especially true now when it is possible to go underground and, finally, it has been demonstrated once again that the infantry has to go in and occupy the place, dig the enemy out, and hold the ground thus won.

Theoretically it would be possible for the Air Forces to drop gas bombs, thus obliterating the whole population. Theoretically, it would be possible for naval vessels with their big guns, or for artillery, to do likewise. Practically, of course, even this is not 100 per cent effective. Unfortunately, and especially now that we have robot bombs, it is a game that can be played by both sides whether it is 100 per cent effective or not.

We do not wish to seem unduly bloodthirsty, but we have never been able to see much difference between maiming people with shells and explosives, and killing them outright with gas. This has been a war in which more civilians have been killed than members of the armed forces.

However, it has been demonstrated time and time again, that gas is not as effective practically as it appears to be theoretically. Gas will not penetrate into closed buildings and thus it is possible for people in bomb shelters or other semi-sealed places to exist until such time as the gas has blown away or dissipated. Furthermore, there are possible countermeasures.

All newspaper headlines to the contrary notwithstanding, we are not winning the war with the speed that is desirable. Some situations are rapidly developing which may, in fact, prevent our winning a complete victory. I do not believe that we will be defeated in the air, on the ground or on the ocean, but our war cry of "unconditional surrender" may not be realized.

The other morning I picked up a man on the street who rode to town with me and the first thing he said was, "Our forces are leap-frogging pretty fast in the Philippines. The war may be over more quickly than we believe."

I thought about that for a while and on checking over the war map, find that we still have to meet the main Japanese army, and while we are capturing one or two islands here and there, the Japanese have been constantly pushing us back in China. It may well be a part of their strategy that when they have been pushed out of the Philippines, when we have in fact invaded their own homeland, we will find it meaningless and that the Japanese will simply move over into Manchuria and China, which they have now held for several years. I think it quite possible that the Japanese have more facilities in China than they ever had in Japan. I think it for the reason that the Japanese took over all the American and British and other foreign facilities that had been built up in China, plus the fact that they have moved some of their equipment to China and Manchuria and, using slave labor, have constructed much more than already existed.

This man I picked up asked this question: "Why do the Japanese and Germans fight so fanatically? Why don't they give up? They must know that they are going to be defeated in the long run."

We Can Lose

There exists the possibility that they **may not be defeated** in the long run. The Japanese and the Germans thoroughly set up their economy for a total war. America has not yet set up its economy for total war. America, on the other hand, through the bungling of the New Deal and other political agencies, has, in some respects, depleted its ability to fight a total war.

For example, America, unlike most European nations and Japan, is widely spread out. Americans always like lots of room. With the exception of a few Eastern cities, Americans live a long way from the places they work, usually several miles. There are no housing facilities near where they work, there is not room to construct such housing facilities, there is not available the material with which to construct them if we wanted to.

We personally run a war plant that has been in operation for many years. The average distance a worker lives from this plant is more than three miles. It would not, of course, be asking too much for workers to come three miles on foot to work and under the rigid requirements of war we would expect to do that. However, many of these workers live five, six, seven and eight miles from work. The time lost and the effort required in the walking of ten, twelve or sixteen miles per day almost precludes any other useful work being accomplished. Under the best circumstances, what it means would be that if we had to walk to work, many workers would undoubtedly change their affiliations and work at plants closer to home.

The aircraft companies are picking up workers as far as fifty miles from their plants. Obviously, those workers would not be able to walk to work nor, in many cases, could they find work closer home.

This means that without the construction of new automobiles for a number of years, and with insufficient new tires, the automobile situation in the United States is depreciating alarmingly. It may well be that before we have new automobiles and sufficient repair parts, etc., to maintain the ones we presently have, we will suffer additional manpower losses before we have any gain.

We, as stated before, operate a war plant that produces many firstline critical items. In spite of many requests to the U. S. Employment Service, they have been unable to replace critical workers as fast as we lose them for one reason or another. This is true of many plants. The daily press states that we urgently need 300,000 more workers. We are told

(Continued on page 76)

Luxury and Safety
. . . are yours in the sporty new *Swift*

You will be proud of your new ***Swift*** with it's smart styling and inviting comfort. There is plenty of room for two six-footers in the spacious cabin . . . upholstered in rich, grained leatherette in your choice of red, blue, or green . . . durable and resistant to water and sun. Cabin trim harmonizes with upholstery. Hardware is chromium plated.

Body conforming seats are deeply padded . . . providing luxurious comfort and freedom from fatigue on long flights . . . an important feature, considering the ***Swift's*** 600 mile cruising range.

Ash trays, glove compartment, cabin heater, and cabin air vent are standard equipment, and the standard 12 volt battery is ample to handle 2-way radio, landing and navigation lights, and other electrical accessories. Ample luggage compartment behind the seats is easily accessible.

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Fort Worth 6, Texas

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Revving Up

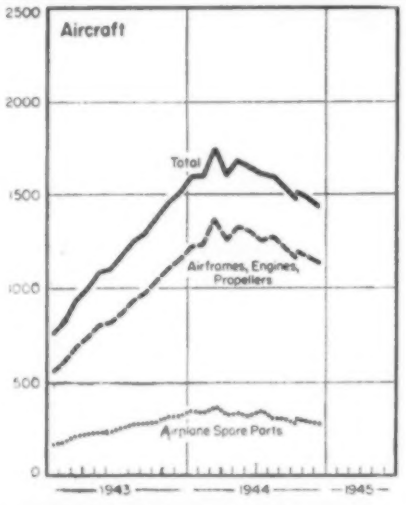
COSTLY CUTBACK: In December we received word from Alcoa that aluminum production, despite recent cutbacks, was sufficient to allow new use of the wonder metal in such items as landing mats for airbases (replacing steel) and gasoline drums for air hauls. In one case Army aluminum sheet was turned over to the Navy for use as siding and roofing on a warehouse, "thereby saving more critical materials." Then early in January came a special dispatch from Wright Field, saying B-29 production schedules are threatened by "an impending shortage of sheet aluminum in the first quarter of 1945." Labor shortage was blamed but the fact remains that production cutbacks had been effected in 1944.

★ ★ ★

SHORT SNORTS: Tex Rankin beamed all over the lot in St. Louis during the NATA convention when he learned a former primary student had just knocked a couple of more Japs out of the sky and had been awarded the Congressional Medal of Honor. Student's name: Maj. Richard Bong, Army Air Forces' top ace. . . . Lockheed's chief engineer Hall Hibbard recently predicted that ten years from now the helicopter will be the plane used most by private fliers and short feeder line operators. . . . Aviation conscious state of Tennessee has established an Aeronautics Education division in its state board of education which will finance aviation correspondence courses for high school teachers of aeronautics courses. . . . Captain Luis de Florez, USNR, fifty-five-year-old recipient of the 1943 Collier Trophy, held a commercial license in civilian life and flew his own Beechcraft in pursuit of his successful petroleum engineering business prior to joining the Navy and taking the assignment as Director of the Navy's Special Devices Division. . . . John B. Walker writes that the Aircraft Accessories Corporation has changed its name to "Aireon." "It's partly aircraft, partly electronics, largely what we make it," Walker says. . . . Ernest R. Breech, president of Bendix Aviation Corporation, recently directed a survey indicating that hundreds of the nation's educational institutions are planning to take advantage of useless surplus aircraft, engines and equipment which will be made available to them on a sale or lease basis under the Federal Surplus Disposal Law. . . . Andrew J. Haire, New York Publisher of "AIRPORTS" recently announced through the National Aeronautic Association prizes totaling $7,500 to stimulate individual and community interest in construction of airport facilities.

★ ★ ★

MORE SCHOOLS CLOSE: Six Army contract flying schools completed their training quotas on December 28 and the operators began transition to civilian flight activities as a means of retaining organizations for emergency use, the Aeronautical Training Society announced. The six schools include Raymond-Richardson Aviation Co., Douglas, Ga.; Darr-Aero Tech., Albany, Ga.; Southern Airways, Inc., Decatur, Ga.; Eagle Field, Dos Palos, Calif.; Ryan School of Aeronautics, Hemet, Calif.; and Midwest Air School, El Reno, Okla. Majority of personnel are being released for other war jobs but the organizations are retaining some key personnel for civil aviation development.



BILLIONS FOR PLANES produced since 1943 are shown by this WPB chart, with value in millions of dollars represented by figures at left. All-time record was made in 1944 with 96,369 planes built (see page 82 for full details). Drop-off will continue in 1945.

WRITERS LEARN TO FLY ERCOUPE

Parks Air College early in December took a group of writers and editors, poured in some aeronautical knowledge, added a dash of Ercoupe flying instruction and the result was enthusiasm for the East St. Louis School, its personnel and aviation in general.

Superintendent of Instruction Frederick H. Roever and Assistant to the President Frank Maher were in charge of the five-day course, through which the students were given a survey of the ground school subjects necessary to the private flier.

Before the course got well under way, the writer-students ran into some of that well-known government red tape, for they had failed to bring their birth certificates. But a long distance phone call to Washington resulted in a waiver of that requirement for student permits. Physical examinations also were arranged for.

High point of the short course, in addition to the excitement of each solo flight, was the graduation exercises, more than adequately emceed by Doc Maher. The writers heard President Oliver L. Parks' forecasts for the expansion of flying after the war, St. Louis airport development plans from Mayor A. P. Kaufman and AWA Member Sam Armstrong of the St. Louis "Post-Dispatch."

The following writers attended the five-day course: Ralph Bailey, managing editor of "House Beautiful"; Sam Burger, aviation editor of "Scholastic"; Shirley Carstens, associate editor of "Aviation and Yachting"; S. Ralph Cohen, editor of "National Aeronautics"; Roland Cueva, editor of "Mechanix Illustrated"; John Davis, editor of "Shell Progress"; Elizabeth Gordon, editor of "House Beautiful"; Hudson Ansley, researcher of "Life"; Robert Finley, managing editor of "Automotive News"; Michael Froelich, assistant to the publisher of "Flying"; R. F. Garland, photography editor of "Saturday Evening Post"; Nell Giles, assistant editor of "Ladies' Home Journal"; Curt Fuller, associate editor of "Flying"; Alex McSurley, associate editor of "Aviation News"; Shirley Frazier, managing editor of "Air World"; Arnold Nicholson, managing editor of "Country Gentleman"; George Scheuer, aviation editor of "Chicago Sun"; Roel Wolfson, feature editor of "Flying Aces"; Emile van Vliet, production editor of "Mademoiselle"; Lucien Zacharoff, contributing editor of SOUTHERN FLIGHT; Basil Talbot, feature writer of "Chicago Herald-American"; Arthur Harris, managing editor of "Aviation Maintenance"; Hans Knopf of "Collier's"; Thomas Lindsey and W. L. Russell of "American Aviation"; Mary Merryfield of "Woman's Home Companion"; Joe Mehr, "Aviation Maintenance"; Bruce Knapp, "Aviation Maintenance"; and Sandal Dailey, "Dallas News".

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GYROSCOPICS • ELECTRONICS • RADAR • AUTOMATIC COMPUTATION • SERVO-MECHANISMS

NEW STINSON VOYAGER is 3-place, 125-hp. (Lycoming) airplane with emphasis on spacious accommodations for passengers and baggage. Note sharp, elongated nose, orderly instrument panel. Specifications include 123-mph. maximum sea level speed; 112-mph. cruising speed at 83 per cent of power; 51.5-mph. stalling speed with flaps; 14,000-ft. service ceiling; 545-ft. take-off with flaps; 265-ft. landing roll with flaps; 470-mile range (4.2 hours) with 40-gal. maximum fuel; 1,118-lb. empty weight; 757-lb. useful load; 34-ft. wingspan; 23-ft. 6-in. fuselage. —(Consolidated Vultee Photos.)

Another "$700" Airplane?

Suggested CAA participation in civil aircraft design has aroused manufacturers. Better planes and prices are needed, but the industry doubts CAA's latest intentions.

HAVING predicted 400,000 civilian airplanes for America within ten years after victory, the Civil Aeronautics Administration has taken steps which it believes will influence the fulfillment of its expectancy. It is pressing for Civil Air Regulations simplification, a billion dollars worth of airports and landing field improvements, greatly improved airways facilities and intensified research.

Such an ambitious undertaking has provoked widespread reaction and CAA Administrator T. P. Wright has on two recent occasions made statements which immediately stirred aviation in general and aircraft manufacturers in particular. In November at the Oklahoma City Aviation Clinic Wright challenged the industry to produce (1) a 150-mph. four-place, all-metal family plane selling for about $2,000, (2) castered landing gear to allow cross-wind landing and take-off and thus make practical one-runway airports, and (3) an effective dampener to reduce or eliminate airplane engine noise. In December the Administrator came out with another impressive statement advocating "active co-operation of CAA with the aeronautical industry in development of private aircraft," declaring he believes it appropriate that funds be made available through CAA "as a stimulus to the development of improved aircraft types."

Another Fiasco Feared

Immediately the Personal Aircraft Council of the Aeronautical Chamber of Commerce of America, speaking for the manufacturers, took issue with Administrator Wright's December statement. The tendency was to connect the Wright plan with the $700 airplane fiasco of 1935, which was proof enough that the CAA has no business in the development and manufacturing of new aircraft designs for the civilian market. Therefore the manufacturers quickly became wary of Mr. Wright's intentions, and pressed for clarification.

John E. P. Morgan, manager of the Personal Aircraft Council, wrote Mr. Wright that the manufacturers "feel the development and engineering of aircraft types is their individual responsibility and prerogative and that they believe that good hard competition in industry is the answer to technological development. They, therefore, would probably jealously desire to retain this activity to themselves individually. It is their understanding that the CAA is an administrative agency and though the CAA naturally is much interested in the development of improved aircraft types, it is not a procurement agency and therefore its interest is academic and not operative. One of the best methods of aiding and stimulating new design and improvement might be through the careful revision of the airworthiness requirements system."

CAA Interested in Market

What set off the tempest was a CAA news release entitled, "Wright Urges CAA-Industry Co-operation in Development of Private Plane." In it he advocated "active co-operation of the CAA with the aeronautical industry in the development of private aircraft as an important postwar project." Pointing out that at present no government agency is providing "an occasional stimulant to industry in the development of civil aircraft," he interpreted the Civil Aeronautics Act of 1938, which charged CAA with "fostering" civil aviation development, as making it "appropriate that funds be made available through the CAA" to provide a stimulant to industry in civil aircraft development.

No concrete plans have been made, he said, but a CAA-industry co-ordinated program "must be actively advanced" to obtain in ten years an annual market for 175,000 civil aircraft, such a market to represent a sales volume of about $350,000,000 a year. He added that civilian pilot training is a proper corrolary of this kind of development.

"Development of private aircraft for personal flying is a departure from recent CAA history, but it harkens back to the successful effort of 1935 to awaken the public to the possibilities of such flying," the Wright release continued. "The CAA effort in

that year to develop a popular private plane contributed to the production increase of light planes from two in 1933 to 436 in 1935, 889 in 1936, 1,523 in 1937, increasing to 4,455 in 1940."

Mr. Wright was quoted as adding: "The present significance of such manufacture is that it will give the country a new and important industry. Furthermore, the amount of flying involved will develop a large backlog of young Americans experienced in the air and in the associated occupations necessary to keep pilots and airplanes flying, all of which is important from the standpoint of national defense. It is imperative that appropriate plans be made for properly encouraging and fostering an industry with these potentials."

Because Administrator Wright's views are a challenge to the industry and outline an apparently determined and considered attitude on his part for the CAA to assume a more active interest in civilian aircraft design, production and sales, SOUTHERN FLIGHT asked several manufacturers to comment.

Piper Disagrees

W. T. Piper, president of Piper Aircraft Corporation, Lock Haven, Pa., America's largest quantity-producer of small civilian aircraft prior to the war program, told SOUTHERN FLIGHT the government's "$700 airplane propaganda reduced sales instead of increasing them," stated by Mr. Wright, and cited other facts and opinions at wide variance with the CAA Administrator's statement. "I believe," Mr. Piper's comment declared, referring to Mr. Wright's challenge for a $2,000, four-place, 150-mph. family plane, "it will be a long time before a satisfactory plane of that type will be available for $2,000."

Mr. Piper's comment follows in full:

"There is a mistake in the figures as quoted by Mr. Wright. I can't say how many light planes Aeronca, Porterfield, Luscombe and other companies made in 1933, but I know that we made approximately twenty in that year. We made a total of seventy in the years 1931, 32 and 33, and in 1934 there was a distinct upturn in our production due to the fact that a large number of bugs had been worked out of the Continental A40 engine which we were using, and the old-time pilots who thought nothing less than 100 horsepower could be used had been starved into buying the light planes.

"Possibly we are wrong, but the consensus of opinion was that the $700 plane propaganda reduced the number of sales instead of increasing them. We were gradually working our way out of the depression and at the same time heavier planes, built in the late 1920's, were wearing out and were being replaced with the light planes. It is my belief that the growth was absolutely natural and had nothing to do with any governmental action until the Civilian Pilot Training Program was started. This undoubtedly greatly increased the number of planes made for several years.

"In answer to his challenge to the industry at the Oklahoma City Clinic, there is no question about the desirability of having quieter airplanes. For several years we have been putting mufflers on our planes with very satisfactory results, and we hope that sometime an engine will be available that will have a reduction gear so that the propeller may turn up slower. This will make the airplane much more quiet than an automobile. I really think that the great objection to the aircraft noise is due largely to its newness.

"I am not so sure that the American public is ready for a 150-mph. plane. Less than 10 per cent of them have ever been in any airplane. Many people won't go up in a slow plane with a competent pilot and there is little possibility that they will be interested in trying to fly a 150-mph. plane with its accompanying high landing speed. Such a plane would be very pleasing to the pilots, but if this industry grows, we must take in the rest of the population.

Price Impractical

"I question whether the materials, engines, instruments, etc., for a 150-mph., four-passenger plane can be purchased for $1,500, the wholesale price of a $2,000 airplane. This is still not a mass production industry and we pay high prices for everything we buy which is not used in the manufacture of some other article. I believe it will be a long time before a satisfactory plane of that type will be available for $2,000.

"The costs of covering America with satisfactory airports is not going to be a tremendous sum and I do not think that it is desirable to penalize every plane built by making it carry a complicated landing gear when for a nominal sum airports can be made to accommodate the planes such as we now have."

Leopold L. H. P. Klotz, president of Luscombe Airplane Corporation, Trenton, New Jersey, which was the first firm to produce semi-all-metal light planes in quantity, commeted briefly in the following telegram to SOUTHERN FLIGHT:

"We appreciate co-operative spirit manifested by Theodore Wright but definitely recommend government's thinking to be governed by existence of present American system of free enterprise and therefore to be confined to research comparative to successful NACA procedure."

Carl Friedlander, vice president of Aeronca Aircraft Corporation, Middletown, Ohio, could not be reached in

(Continued on page 42)

FAIRCHILD'S FAMILY DESIGN has not been completed or flown, but will be a 4-place low-wing with "possibility of provisions" for five persons. A development from the PT-19 "Cornell" trainer, the postwar design is called the M-84 and is to have controllable pitch propeller.
—(Fairchild Drawing.)

TAYLORCRAFT'S NEW FAMILY PLANE, Model 15, is in $4,000 price bracket, has roomy accommodations for 4 persons and is powered by 125-hp. engine. Note wing, a new design with slots and flaps. Preliminary specifications include 125-mph. top speed; 112-mph. cruising speed; 40-mph. landing speed with flaps; 38 gal. maximum fuel; approximate 5½-hr. cruising range; 1,275-lb. empty weight; 2,250-lb. gross weight; 36-ft. 6-in. wingspan; 23-ft. fuselage; 7-ft. 3-in. height. —(Taylorcraft Photos.)

Here is a scene at Curtiss-Parks Airport, East St. Louis, where most of the visiting airplanes were based during the convention. Although bad weather prohibited hundreds of non-scheduled airmen from flying in, several score managed to get in. Biggest disappointment was Republic Aviation Corporation's new amphibian becoming weather-bound at Indianapolis.

NATA'S FIFTH CONVENTION

An excellent trade exhibit, participation of manufacturers, distributors and fliers in lively conference sessions and the largest registration in history made for a successful and productive non-scheduled aviation convention at St. Louis.

By GEORGE E. HADDAWAY

IN spite of hell and high water, foul weather, hotel sell-outs, a serious year-end epidemic of aero conventionitis and a painful shortage of cigarettes, the NATA-ADMA convention in St. Louis, December 5-9, was generally conceded to be the most successful meeting of non-scheduled civil aviation in history and without doubt the largest aviation gathering of 1944. Twelve hundred registrations "ain't hay" in any convention, including life insurance, and the unprecedented figure may be taken as a positive index to the growing belief that non-scheduled aviation offers rich opportunities and that some day it will become a great industry not only in size but in profits as well.

Few of the registrants at NATA's fifth annual convention will deny that the organization has passed through the age of adolescence and finally has grown into robust, voting-age manhood. One thing is certain, NATA has outgrown the Jefferson Hotel.

Trade exhibit booths were all over the place with airplanes and gliders hanging from the lobby ceiling. The main assembly room was banked by a score of exhibits, whose milling visitors interfered considerably with the panel sessions. It was similar to holding a meeting in Grand Central Station. However, the setting was ideal for lots of productive hangar flying, for talking shop, making deals and doing some sound planning for the future. In spite of the confusion caused by business negotiations running competition with scheduled convention sessions, the panel discussions managed to reach the heart of many basic problems while the quality of prepared speeches was well above average.

Manufacturers and Distributors

The participation of manufacturers and distributors in the exhibits and sessions contributed materially to the profit side of the convention ledger in more ways than one. Their presence and deep interest in the operators' problems and the welfare of private flying in general served as a reminder all are bound together by an inherent community of interests and what affects one vitally affects the other.

The Aviation Distributors and Manufacturers Association held their second annual convention simultaneously with the NATA meeting. One of the basic functions of ADMA, as expressed by its capable secretary, George A. Fernley, is to encourage the efficient distribution of aviation products, to find the best channels through which they will reach the consumer, to make certain that buyer and seller alike clearly and correctly understand the function and services of the wholesale distributor.

Every industry has its wholesale distributors and no successful by-pass for the aviation distributor has yet been found. Just as the manufacturer is affected by the problems of the fixed-base operator, so is he involved in the matter of wholesale distribution. Plainly evident at the ADMA sessions was the desire of manufacturers to avoid, as much as possible, direct dealings with the ultimate consumer. Today the average aviation distributor handles the lines of seventy to eighty separate manufacturers which requires a stock of from twelve thousand to eighteen thousand different items, which are sold to twenty-five hundred to three thousand buyers throughout the nation. Consequently the manufacturers as well as the operators depend more and more and will insist upon the services being rendered both economically and efficiently by the distributors engaged in the wholesaling of aviation parts, supplies and equipment.

Officers, governors and regional presidents elected for 1945 are: Roscoe Turner, Indianapolis, president; Beverly Howard, Orangeburg, S. C., first vice president; Norman Larson, Fresno, Calif., second vice president, and John H. Wilson, Kansas City, executive secretary. Governors—Howard Ailor, New York; Clarence A. Ludwig, Tampa, Fla.; Arthur Currey, Galesburg, Ill.; John H. Q. Burke, Oklahoma City; F. C. Anderson, Des

Moines, Iowa; John E. Schwaner, Beckworth, Ga., and Mac Anderson, Ellensburg, Wash. Regional Presidents —Joseph Garside, Norwood, Mass.; Tom D. Eve., Charlotte, N. C.; J. R. Harrington, Mansfield, O.; J. Alvin Guthrie, Stillwater, Okla.; James C. Johnson, Springfield, Mo.; John E. Schwaner, and Carl Schirmer, Spokane, Wash.

ADMA officers and directors elected for 1945 are: Tom O. Duggan, Cleveland, president; R. V. Trader, Pittsburgh, Pa., and Richard M. Bomberger, Lititz, Pa., vice presidents; Ray Snyder, Chicago, advisory board; George A. Fernley, Philadelphia, secretary-treasurer; and H. P. Ladds, Cleveland; T. G. Tynan, Philadelphia; George Wilson, Chicago; R. D. Hicks, Muskegon, Mich.; Sydney Nesbitt,

ST. LOUIS CONVENTION GOERS: Top row: Bill Taylor of Culver with Tex Rankin; Leopold Klotz, Luscombe president; Verner Vale of Embry-Riddle; Fairchild's Glenn Evins pins an orchid; Al Bennett of Aeronca; and some of the crowd at Scott Aviation's booth. Second row: George Hart from Wichita; George Haddaway of Southern Flight, and Andy Martin of McGraw-Hill; Florida's Wes Raymond; Fairchild's Lee Smith and customer; Karl Ort, Pennsylvania supply man; John E. P. Morgan and Joe Geuting of Personal Aircraft Council; and Bill Piper. Third row: George Lewis, Lycoming, and Frank Johnson, Stinson; Gerry Francis, Clint, Michigan, operator; Ray Applegate and friend; Luscombe's public relations expert, Charlie Gale; Pioneer Instrument representatives with Stinson's Frank Johnson; Ellis Gotcher, Precision Aeromotive, Houston. Fourth row: C. F. B. Roth, Aircooled Motors, and Susie, Southern Flight's bulldog; Dick Steward and Howard Oelsen of Ranger, with Robert Donner, Colorado Springs; Ole Fahlin, taking it easy; Jack Burnelle of Chickasha, Okla., Ray Wilson of Denver, Colo., and Kent Bradford, Fairchild Aircraft service manager; John Stuart, New York Times, making like busy; Howard Oelsen and Al Guthrie of Stillwater, Okla. Fifth row: Betty Oliver and Tony Hagmann, waiting on another subscriber in Southern Flight's booth; Fairchild's Jim Wales and Carl Friedlander, Aeronca; Grove Webster, now with Purdue University, and "daddy" of original CPT program; Mrs. Martie Bowman, Fort Worth, with Mrs. Virginia Cutter, Albuquerque, and Frank Say, Dallas; Convention Chairman Clarence Mooney and former NATA President Bill Ong; Bill (Cecil B. de) Strohmeier of Hawthorne. Bottom row: Warren Smith, CAA, Kansas City; C. F. B. Roth, Sid Mehaffey of Lancaster, S. C., and George Lewis of Lycoming; Jim Johnston, Springfield Flying Service; W. F. Scott, Jr., of Supply Division, greets an old customer; Steve Stephenson, Aero Insurance Underwriters; Jim Welsch, Stinson's sales manager, with Ted Weld, Piper Aircraft vice pres.
—(Photos by Buzz Hershfield-Ranger.)

Sydney Nesbitt, Lear aviation radio sales manager, who detailed the necessity for providing better service facilities to the private aircraft owner. He called for a decentralization of service facilities to cut costs and expedite maintenance and repairs.

New York; R. B. Kenty, Dallas; L. G. Mason, Hapeville, Ga.; G. B. Van Dusen, Minneapolis; W. F. Scott, Jr., Robertson, Mo., and Rudy C. Mueller, Omaha, directors.

Both ADMA and NATA sessions stressed the importance of improved service to the consumer—the airplane owner. Syd Nesbitt of Lear Avia hit the keynote of the service problem when he emphasized the fact that if the customer doesn't receive service on his airplane at reasonable cost, and quickly, he may become discouraged, forget about flying and get rid of his airplane. Aviation's biggest competition, he averred, is not so much within the industry itself, but in the other forms of transportation. "To give the private flier service," he concluded, "whoever sells him his airplane in the first place—the manufacturer, distributor or dealer—must either provide comprehensive service right on the premises, or by arrangement with specialized service depots in the immediate vicinity where the farmed-out work can be carried out properly and without delay."

Essential Civilian Production

One of the best papers of the 1944 convention from the standpoint of clearing up confusion in the minds of many people was that delivered by A. W. Lewis, WPB chief, aircraft priorities branch, aircraft division, entitled, "Current Developments in the War Production Board". Especially newsworthy was his clear interpretation of Limitation Order L-48, providing for the manufacture of aircraft and aircraft products if the demand for them is directly related to military needs or to the operation of a service to fill an essential need. He announced that authorized schedules for essential civilian production have been issued recently to Grumman, Schweizer, U. S. Propeller, Sensenich, G. B. Lewis, Fahlin and Flottorp. Other applications are pending and in his opinion, restrictions on civilian and commercial production will be relaxed shortly after "Victory-in-Europe Day" if such relaxation does not interfere with the war production necessary to defeat Japan. This statement is the first from an official source giving any indication as to when we can expect the flow of new airplanes for essential civilian use. Lewis gave assurance that essential civilian requirements will be given every consideration from his division.

Subsidized Flight Training

Although the Civilian Pilot Training Act remains in force, no funds have been appropriated and there is little likelihood of reinstating the program any time in the near future. But there was much conversation on the subject and the matter of government sponsored flight training was constantly referred to throughout the convention. NATA's president, Roscoe Turner, and Executive Director John Wilson, called for a revival of a training program similar to the original CPT, advising that the only way to accomplish the revival was through pressure on Congress.

The address of the Assistant Secretary of Commerce for Air, William A. M. Burden, was read by his assistant, George Burgess. The Burden speech contained this revealing reference to the subject of training:

"In the postwar period, we feel that Federal aid can and should be on a more modest scale (as compared with the original CPT). Our idea is that the Federal Government should bear approximately 75 per cent of the total cost per trainee, the balance of which would be paid by the sponsoring colleges and the individual trainees, according to whatever arrangements those institutions work out. Although the courses would be given at colleges, they would not by any means be limited to college students. We would recommend that a very substantial proportion of non-college men and women be offered training."

The course would be limited to the elementary stage with the Government's expenditure on each student averaging around $270. The college sponsors would make all arrangements for flight training facilities, utilizing their own or contracting with flight operators. At the conclusion of his address, Burgess offered the following observation:

"Bills to implement such programs as the national airport plan and the training of pilots do not get passed because some department of the Government wants them. They get Congressional action only when a sufficient number of citizens actively express good reasons why a bill is to the benefit of the nation."

But the operators are not too concerned at the moment about postwar Government-sponsored programs. What interests them is the answer to the question of whether any new training program will be devised in the near future—while the war is still going on. The only reference to any plan with immediate implications was made by Lt. Col. William Barclay Harding, director of the aviation division, Surplus War Property Administration, in his forthright discussion of surplus disposal problems and policies. Commenting on the suggestion that certain surplus military training planes should be distributed to fixed-base operators throughout the country under some type of organized training program for use in training and by ex-service and reserve pilots, he had this to say: "If the latest and best of the military trainers were distributed by the government to fixed-base operators at no cost, many ex-service pilots might want to put in enough time on them, enough to maintain ratings on aircraft powered in the higher horsepower brackets, even though they could afford to fly regularly only the lowest powered aircraft. Personally I think well of this idea and if it makes sense to you operators I suggest you put it on your program for the coming year and get behind it."

Like the feeder line prospects, government sponsored flight training appears to be a long time off, and the realistic operators returned home from the St. Louis meeting convinced that for many months to come there will be no new sources of income other than those they dig up on their own hook, in their own backyards.

Local Feeder Services

Citing the remarkable growth and success of All American Aviation's airmail "pickup" service in the East, Chairman L. Welch Pogue of the Civil Aeronautics Board (address read by Russel B. Adams when Pogue was held in Chicago for the closing sessions of the International Aviation Conference) reviewed the practical economic factors that stand in the way of indiscriminate establishment of short-

haul feeder airline systems into smaller communities. In his opinion there will be frequent but irregular demands for air service to and from small cities which in any particular region and in the aggregate will be sizable . . . a glorified regional taxi service by air, operating between points where no scheduled air services exist. He reminded his audience that 500 charter operators flew over 9,000,000 miles for hire in 1940, or over eight per cent of the 109,623,000 revenue miles flown by domestic airlines in the same year. "Here might be an opportunity," he observed, "for private enterprise without the benefit of mail payments bearing the character of a subsidy, to conduct a pioneering experiment of its own." The challenge is a timely one. Charter possibilities simply haven't been exploited by the average fixed-base operator.

Other limitation affecting the establishment of scheduled short-haul lines were brought out in the remarks of Col. Harding on surplus equipment and of William A. M. Burden on airports. The Colonel reported that the most popular plane for feeder line operations, according to applications received by his administration, is the Beechcraft C-45. In his opinion, however, it is unlikely that any quantity of these planes, or the advanced trainers of similar design, will become surplus until the defeat of Germany, but that eventually there should be enough to go around and operators would be wise to file their applications promptly. An application is not a commitment to purchase. He pointed out that at present there are quite a few Cessna UC-78's available, and while they are not yet certificated by the CAA for commercial operation, steps are being taken which will probably result in their certification. Harding said that multi-engined planes over 5,000 lbs. gross will not be offered for competitive bidding but will be sold at stated prices which vary according to the condition of the individual airplane. For example, top price for the Cessna UC-78 is $12,000.

Burden's speech drove home the fact that out of the 678 locations named in applications for certificates of convenience and necessity pending before the CAB, only 93 have suitable airports. Improvement projects would be required at 385 and new fields would have to be constructed at 200. So ended the lesson—and the hopes for feeder line contracts.

Regulations

If the average private flier and fixed-base operator didn't have something to "gripe" about, he'd probably

(*Continued on page* 64)

Operators, CAA Form Partnership

SOMETHING new in aviation conferences took place in Fort Worth, Texas, January 2-3-4, when the Civil Aeronautics Administration (Fourth Region), the National Aviation Trades Association (Fourth Region) and **Southern Flight** sponsored a non-scheduled civil aviation meeting for the purpose of bringing about better relations between operators and CAA field personnel, and for the open forum discussion of specific problems facing the CAA and the non-scheduled operator.

The success of the affair surprised everyone, including the sponsors. Nearly 200 operators and CAA field men from Oklahoma, Texas, New Mexico, Louisiana and Arkansas were registered.

Fred M. Lanter, director of safety regulation, CAA, Washington, and Jesse Lankford, director of Safety Bureau, CAB, Washington, flew in for the meeting as did the General Inspection chiefs of all seven CAA regional offices.

The three-day conference developed from the premise that the official Federal aviation authority is a public service institution and progress in non-scheduled civil aviation can come only through the closest cooperation between non-scheduled aviation and the CAA and CAB, especially in the field. After three full days of constructive, vigorous and oftentimes heated discussion of specific problems and case histories, the group voted to make the clinic an annual affair and appointed a permanent "gripe committee" to channel all grievances of operators, private fliers and CAA or CAB personnel in hopes that each case can be acted upon as it occurs and that constructive suggestions will issue from committee action to remove the cause for trouble, friction, unnecessary hardships and red-tape. CAA and CAB personnel present emphasized the fact that they were as willing as the operators to cut through red-tape, simplify regulations and relieve non-scheduled aviation of some of its major headaches.

Far-Reaching Recommendations

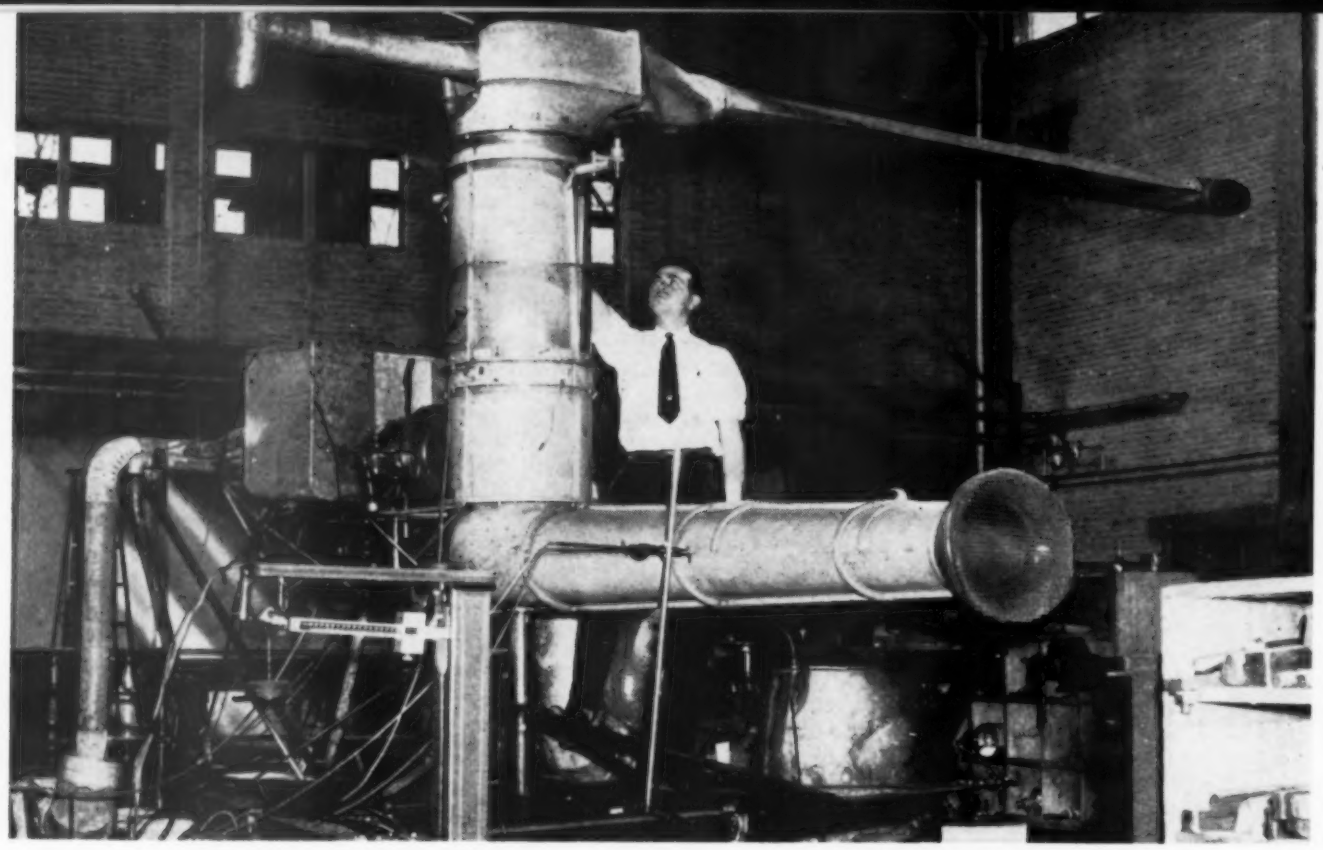
The group went on record urging the extensive decentralization of authority within the CAA and the allocation of more power and authority to the field organization. They endorsed proposed changes to Parts 20, 43 and 60 of the Civil Air Regulations affecting private pilots except the provision eliminating spins from the private flight test. They also resolved in favor of the appointment of flight examiners from the ranks of present civilian instructors who would have the power to issue private certificates. They recommended that the instructor be required to approve the student for flight examination before receiving the flight test and that proper entry of approval be written in the student's log book.

They went on record proposing that all repair shops and maintenance facilities be certificated for the type of repairs or maintenance on aircraft and engines for which they have adequate ability, personnel and equipment, and that forms such as 337 and 309 be eliminated. By placing full responsibility on the repair shop, airplanes would not have to wait the approval of an inspector before it could be flown.

The group recommended that the government sell all surplus aviation material including airplanes only to bona fide aviation manufacturers, distributors and dealers in much the same manner that the disposal of surplus Army automobiles is carried on through normal trade channels. They suggested that all surplus airplanes and equipment whose design characteristics would make CAA certification impractical be made immediately available at no cost to all educational institutions offering aviation courses.

The conference went on record in support of the CAA national airport program and recommended it be adopted by Congress at the earliest possible moment, specifying that the interest of private, non-scheduled aviation be uppermost in selections of sites insofar as communities are able to match Federal funds. State or municipal legislation duplicating existing regulations of the Federal government was condemned as was any attempt at this time to impose new tax burdens on the industry. State legislation should not contain any provisions for economic control and states contemplating aviation legislation should call in competent and experienced aviation people for guidance and counsel.

A resolution recommending the proposed changes to CAR 24 (affecting mechanics) be adopted by the CAB passed by a large majority. A resolution on education suggested flight operators provide flight scholarships at absolute cost of operation for people in educational pursuits or who are aiding aviation generally. It was also recommended that some agency undertake the production of a book containing complete data and manufacturer's recommendations for optimum performance and maximum operating efficiency of each model of airplane. ★ ★ ★



Laboratory tests at Georgia Tech are being conducted with this single-blade jet-propelled helicopter rotor. Air drawn in through pipe at lower right is compressed by ordinary motor, forced through duct in blade and expelled from large nozzle at tip of blade. Note counterbalance. Mechanism is shown here suspended at three points on scales, which measure blade's lift.

Georgia Tech's Jet-Propelled Helicopter

With nine years of research behind it, a unique design for jet-driven rotors is showing promise of practical application.

By HUNTER R. HUGHES, JR.
Southwestern Editor,
Southern Power & Industry

PROFESSOR Montgomery Knight, Director of the Guggenheim School of Aeronautics at Georgia Tech, died in July, 1943, after having devoted seven years to the development of a jet-propelled helicopter. His work, however, did not stop with his death. The staff he had trained, headed by young, able Don Dutton, the new director of the school, continued the design calculations and experiments. Blade tests have been made and a model built and flown.

Public attention was called to this model last month when it was described at the annual meeting of the American Society of Mechanical Engineers in New York. Professor Dutton did show slides of the model in connection with his talk before the society on "Helicopter Development," but the model itself was left behind in Atlanta.

The Georgia Tech helicopter differs from other helicopters in one fundamental idea. The rotor, instead of being turned by a shaft from the motor, is turned by a jet of air or gas ejected from the tip of the rotor blade. The arrangement is simply that of a lawn sprinkler using air or gas instead of water.

Many Problems Unsolved

It is clear that the use of a jet for propulsion brings up design problems, many of which have not yet been satisfactorily solved. On the other hand, this type of prime mover offers so many advantages, especially for the helicopter, that the idea seems to be well worth the years of research spent on it.

In its current stage of design, the Georgia Tech helicopter is envisioned as a machine that will consist of a well streamlined fuselage with a conventional rudder and stabilizer. No elevators or stationary horizontal tail surfaces are needed. A single-blade rotor with a counterweight is placed above the fuselage. There is a nozzle at the tip of the blade from which gases are ejected. This jet turns the rotor.

The Tech helicopter has no power shafting between the rotor and the fuselage and, hence, there is no torque reaction. The rotor is attached to the fuselage by a simple bearing mount-

ing. This is a most important simplification that can materially reduce both original cost of the helicopter and the complications of operation.

The conventional aircraft rudder of this helicopter controls the direction in which the fuselage faces. When the machine is hovering, the yaw is controlled by the rudder pulley. The rudder, itself, is always active, for whether the helicopter is in motion or hovering, the rudder is in the rotor's slipstream.

Georgia Tech selected a single-blade rotor for several reasons. It is simple to design and manufacture, it is not subject to as many vibration problems as the two-blade rotors, it makes "parking" and "garaging" simple, and it is better for the jet helicopter because it is more efficient if the inside of the blade is used as a duct to carry the jet gases. Even if the entire jet mechanism is confined to the end of the blade so that the blade is no longer used as a duct, Professor Dutton still thinks that the single blade has definite advantages.

Type of Power Plant Undecided

Several types of power plants are being studied to supply gases to the jet. They may be classed as outside or inside engines. An inside engine would be any engine that is housed in the fuselage and gives off gases that pass through the rotor blade and are ejected from the jet at the tip. This is the type that has been used experimentally at Tech to test the lifting force of the blade. The blade was so constructed that compressed air from an axial blower passed through ductwork to the hollow blade, through the blade, and out the jet nozzle. The apparatus was set on a test stand in Tech's aeronautical laboratory and the lifting power of the blade measured.

A conventional compressor operated by a gasoline engine is probably too heavy for its horsepower output for actual use in a plane, but it served well for test purposes. In a practical design, the engine-compressor arrangement might be replaced by a gas turbine or a free piston engine. The free piston engine is, in simple terms, a Diesel engine that produces its output

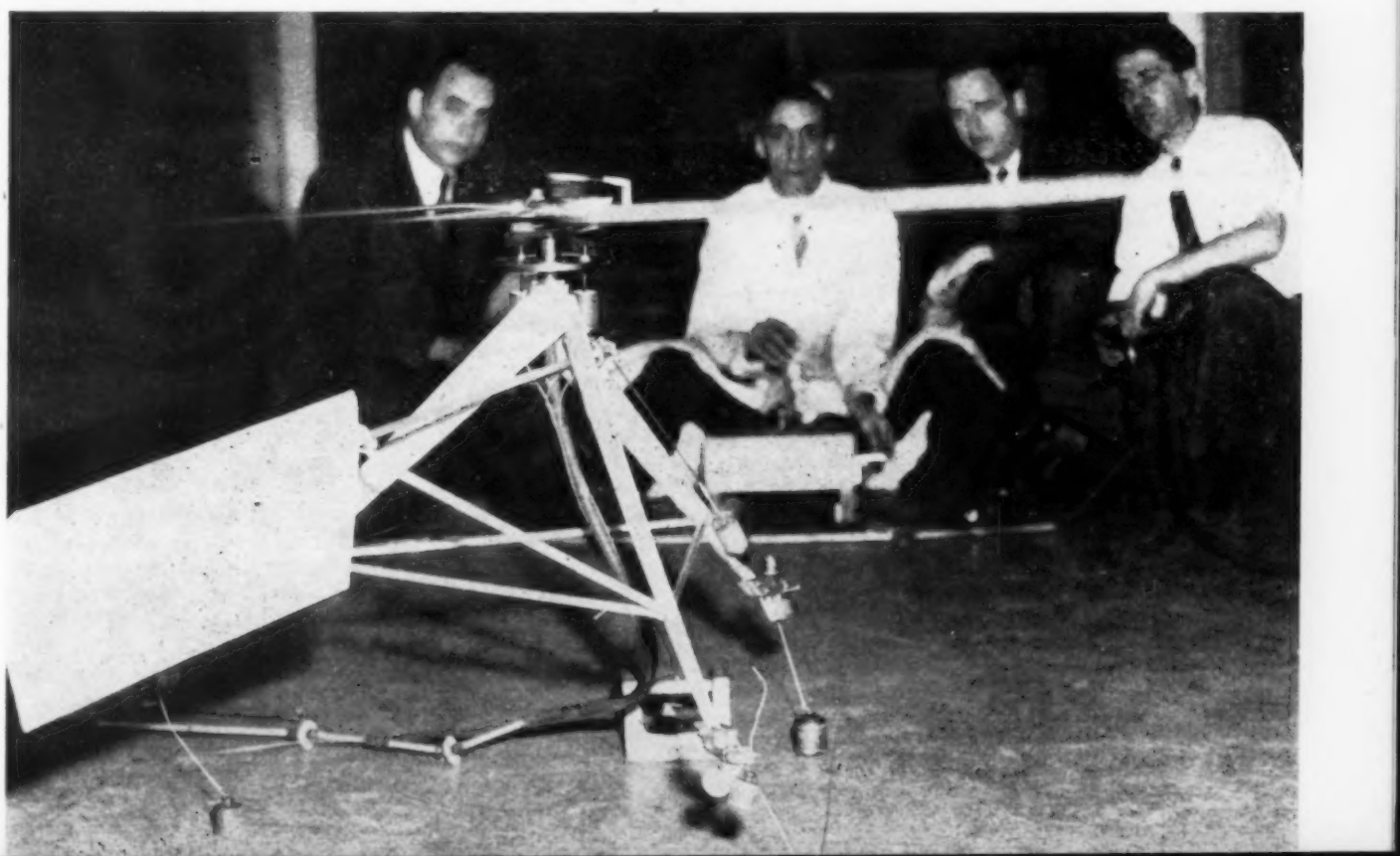
(Continued on page 40)

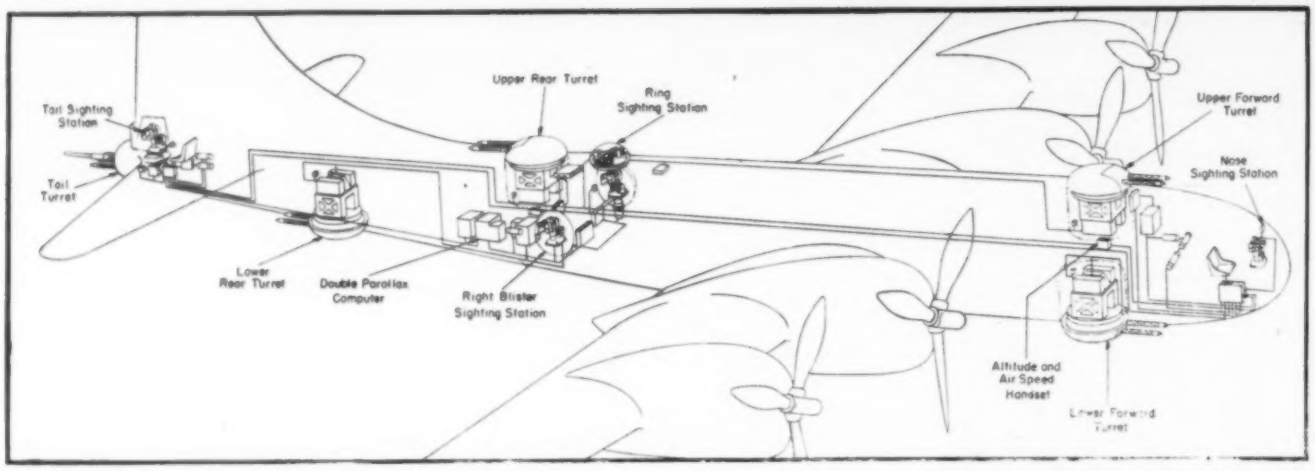
GROVER LOENING SAYS ORDINARY ENGINE CAN DRIVE JET 'COPTER

While the application of jet propulsion to a helicopter appears at first glance to be a Buck Rogers scheme, some successful engineers see definite possibilities in the idea. Addressing the Aero Club of Washington, D. C., recently, Grover Loening, chairman of the Helicopter Subcommittee of the National Advisory Committee for Aeronautics, after reviewing historical and current shaft-driven helicopters, referred to jet-propelled windmills as follows:

"There is still another type of helicopter now being worked on in secret in three or four different places in this country, but one which Professor Stalker of Detroit and the late Professor Montgomery Knight of Georgia Tech were among the earliest to disclose and to propose. This is another way to get rid of the torque and to accomplish a lot of other desirable things in addition to the possible use of jet engines. The helicopter rotor drives itself around the axis by the reaction of a jet of air discharged along the trailing edge of the blade or at the tip. When this is done there is no torque because the motor power is not directly applied to the rotor shaft. **This has, in the opinion of many engineers in this field, a most promising future.** It will probably be called a jet-drive helicopter. Actually, an ordinary engine can be used, driving a blower which will exhaust its air out at the tip of the blade and drive the rotor around very much like the familiar garden spray is driven by a jet of water." ★ ★ ★

Flying model of jet-propelled helicopter is shown below in action (note weights), with compressed air from rubber hose driving scale-model rotor. Left to right in background are G. O. Rosselot, State Engineering Experiment Station director; Walter Castles, Jr., research engineer; Professor D. W. Dutton, director of Daniel Guggenheim School of Aeronautics, and E. I. Bricker, research engineer.





SUPERFORTRESS FIRE CONTROL is explained by this one-line ci.cuit diagram, which shows how B-29's five remote-controlled turrets, five sighting stations and accessories are interconnected. Five gunners control the turrets in more than thirty combinations, with as many as three turrets aimed and fired simultaneously by a single sighting station. Nose gunner fires both top and bottom nose turrets, upper gunner fires upper rear guns and upper nose turret when nose gunner busy elsewhere, side gunners control lower rear turret and can control tail guns and lower nose unit when their operators aren't using them. B-29 can carry forty 500-lb. bombs.
—(General Electric Drawing.)

20th Air Force Progress Report

Super bombing has its special obstacles, but they're being cleared in good order. Here are the latest sidelights on the B-29 offensive against Japan.

By SWANEE TAYLOR

ORDINARILY you do not check into the life-story of a six-months-old babe. But in the case of the Twentieth Air Force—America's first "independent air arm"—we are not dealing with ordinary babyhood. Here is an extremely lusty and precocious infant that was rushed upon its pre-ordained career scarcely before it was out of the delivery room. One which, in its first few hours of life, was called upon to carry the battle to the enemy.

This will be a brief glance at the known facts together with mention of certain developments forged in the heat of battle which may be told at this time.

The B-29 had to forego such normal steps of progression as weaning, teething and creeping. Or, to put it another way, the baby B-29 had to learn to eat meat before it had teeth and button up its own clothes before it was old enough to wear pants. Credit for the swift transition from infancy to muscular manhood goes to Major General Kenneth B. Wolfe, of Denver, Colo., who was then Chief of the Production Division, Materiel Center at Wright Field. General Wolfe was later assigned to lead early missions over Japan, not for reasons of sentiment or award, but to observe the plane's performance under service conditions together with the chance to spot any inadequacies that might be brought out in battle. After which he hurried back to Dayton to incorporate his findings in subsequent models.

Bombardier Moved, Engine Cooling Improved

Whatever these technical findings were cannot be detailed here. It can be stated, though, that most of the changes made had to do mainly with crew comfort and battle efficiency, such as, for example, moving the bombardier aft a ways to relieve overcrowding in the nose. As a matter of fact, surprisingly few modifications were necessary; so few as to be a trifle uncanny from the engineer's point of view. Which in itself is quite a tribute to Boeing design and engineering.

Of course engine over-heating presented the usual headaches that come every time horsepower is stepped up. Yet despite an inordinate amount of gossip and yammering, the heat control problem in the B-29 was no greater or no less than in earlier types of heavy duty aircraft. The only difference was that the solution had to be found in the face of the enemy. But that it has been solved is amply borne out by the virtual disappearance of the chill "None of our planes were lost to enemy action," that appeared in early communiques.

As for the pressurized cabins, there is little to report beyond saying that the patient years of study and experimentation are paying rich dividends in crew comfort, safety and efficiency. Today every man setting out on a 3,000-mile round-trip in the substratosphere does so in the confident knowledge that the high altitude holds no terrors even if a cannon shell passes through the cabin. For, he knows all about the numerous explosive decompression tests, with a Wright Field major as human guinea pig, including the instance where they fired an artillery piece through a pressurized fuselage sitting in a decompression chamber just to see what would happen to the major. (His cheeks and lips bulged and flapped as the air was sucked out of his lungs,

but he had ample time to adjust his oxygen mask before the 5-mile "altitude" could affect him).

Another unexpected circumstance resulting from high altitude operations was window frosting. To be sure, defrosting equipment had been provided, but it was for use when flying in the overcast or under icing conditions. No one knew that in the extreme cold of the sub-stratosphere frost will form on glass in a trice. The Twentieth learned this lesson the hard way: One of those alleged "suicide" rammings, by a Jap fighter, in reality was just the opposite. The B-29 did not see him, because of the frost, and simply ran him down.

Japanese Defenses Unpredictable

Concerning the action over the Japanese homeland, no one in the whole AAF will voice a positive opinion beyond saying that it is rougher 'n hell. The simple truth of the matter is that it is still impossible to determine whether the Japs are incredibly stupid in their air defense tactics or if they are just playing dumb. We are going over in ever increasing strength and regularity, yet the reception met by our planes has never been the same on successive days.

There were times, for example, when inbound missions arrived over the target area utterly unmolested to meet with light, inaccurate flak during the bombing runs. At other times the Superforts had to battle their way in against very determined fighter opposition and then find the flak intense and painfully accurate. This may be the little sons-of-heaven's idea of guileful strategy; a good way to cross-up the Americans and get them befuddled. Quite a few people go along with this thought.

On the other hand, there are just as many who have put the Japs down as sly in an unoriginal way but oafish for all their cunning. To back this claim they cite a classic case of Nipponese numbskullery as manifest in the Tokyo raid of December 27th. On that day the Twentieth arrived over the city two hours earlier than usual and from a different direction. Unbelievable though it may be, the fighter defense had not left the ground and radio Tokyo was blatting away merrily. Nor did the anti-aircraft fire get started until the B-29's were starting their bombing runs.

There are any number of like instances of outstandingly patent stupidity. Whether they are wily or witless does not matter here. The deadly fact remains that every time the Twentieth goes out on a mission those kids sooner or later undergo a blistering bath of battle. Even in the Tokyo raid just mentioned the fighters rose in the greatest strength yet and poured it on for one and one-half hours. One B-29 was shot down.

Then there was the time when another Superfort (evidently a straggler) had to fight off twenty-five attacks and passes by 100 Nips. And although eight out of the 100 were shot down, with never a single nick to the B-29, that is the kind of stuff that burns a hole in your soul.

In regard to operational functioning the 20th Air Force is faced with two terrific handicaps getting to and from the target, distance and weather.

Since the Twentieth's operations embrace vast distances it follows that the crews spend long hours in the air on each mission. Which, in turn, is translatable in terms of work, hard work. It takes a lot of Man to stand up to the job assigned the 20th Air Force.

Weather Is Major Handicap

About the weather, the best that can be said is that it is fiendishly unpredictable. So much so that certain expensive and time-consuming measures have to be taken in order to give the pilots a fifty-fifty break. Yet for all these certain measures, each mission bumps into two or more fronts. The unpredictable ones are those caused by heat convection over the atolls and shoals that abound in the Pacific, while the others are in many cases the beginnings of our own North American weather that makes up out there in the Japan Stream near the Bonins. Some of the fronts reach right on up for the moon and cannot be topped even by a Superfortress. Which is to say that all too frequently they have to barge on through the turbulence. A good idea of the beating they take may be imagined if you will reflect a moment on the enormous wing surface of a B-29 and upon the fact that the wingtips have an allowed "travel" of around 6-8 feet. Then place yourself on the inside looking out at those wings weaving and flapping in the murk. Thus you capture a glimmer of how those boys really sweat it out.

Which brings us to the matter of personnel; how the boys are standing up under the aggregate strain, how often do they have to fly, and the like.

Well, the answer to the first part is that they are taking the whole show nicely in stride. The big reason is found in the selection and training policies that affect every man assigned to the Twentieth. Each one of them is thoroughly battle-tested, with some 300 hours of 4-engine experience for pilots, before being selected for training. Following this preliminary safeguard the crewmen are sent to a Superfortress transition center where they are put through a special course which, we are told, is as revolutionary as the plane itself.

Due to a number of reasons, all of them military, the missions are not scheduled on a time-table basis. Hence there is as yet no way of determining precisely how many trips a crew can take per week or per month. But it has been found that one raid was enough for one man, while on the other extreme we learn that Lt. Col. Bob Morgan, of *Memphis Belle* fame, has demanded to go—and gone—on every single Tokyo mission up to this writing.

A happy concluding note to our report on global warfare's newest baby is struck in relaying to you the impression that prevails among Washington newsmen and commentators. These jaundice-eyed observers rarely raise an eyebrow at anything, no matter how startling. Yet they are acting like a bunch of doting grandparents over the 20th Air Force. And the reason for this, as one of them points out, was the complete absence of fanfare and whoop-de-doop publicity when the infant was born. Or, as another one put it, next to bombing Japan the Twentieth's greatest accomplishment is arriving at a sober, factual, non-exhuberant policy of reporting its activities. Which, come to think of it, is a new page in aviation press relations. ★ ★ ★

Pneumatic Pants Prevent Pilot Blackout

LATEST flight aid for Army and Navy combat pilots is pneumatic pants—high-waisted, with built-in suspenders and girdle—which prevent fighter-pilot blackout in tight maneuvers. Compressed air from the plane's vacuum pump inflates bladders which supply pressure over the abdomen, thighs and calves, thus preventing the pooling of blood in the lower extremities and aiding circulation to the brain. All the pilot does is zip on the G-suit and plug it into the air line before taking off—a valve automatically supplies the pressure or deflates the bladders whenever the force of gravity rises above or falls below 2 G. Many pilots have attributed enemy kills to the anti-blackout garment, and high-speed 180-degree turns in combat are readily made without blackout.

RESEARCH *Can Be* PRACTICAL

By C. F. REUPSCH
Assistant Chief, Manufacturing Research, Consolidated Vultee Aircraft Corporation

IT has long been the opinion of many aircraft leaders that research, like many other professions, cannot be budgeted. However, Consolidated Vultee Aircraft Corporation operates efficiently a manufacturing research department which trouble-shoots problems concerned in the manufacture of Liberator B-24 bombers and the new Dominator B-32 superbombers with highly tangible results. Success of the department proves that research can be effectively organized and administered throughout any large corporation.

Convair's research organization, which a few years ago was but an idea in the mind of E. W. Berger, now chief of manufacturing research, is today a department of half a hundred engineers, chemists, draftsmen, machinists and stenographers. It was founded upon the idea that trained and experienced personnel, working to devise means of improving the manufacturing of the component parts of airplanes, would repay with results, the company's investment.

"Invent a method for accurately testing rivet guns." "Devise a means of checking fuel vent lines for leaks before installation of fuel cells." "Develop a method for producing accurate mirror images on an offset printing press for template reproduction." These are but a few of the typical requests placed in the hands of this department every day.

The functions of the group are outlined simply in Convair's standard practice manual: "The field of activity of the corporation manufacturing research department shall comprise improvements in physical means for cutting, forming, fastening, surface treating, heat treating, and inspecting materials used in the manufacture of corporation products or tools to produce such products. Where cost improvement proposals, employe suggestions, or other methods improvements require development of physical means, division personnel in charge of these activities may request the corporation manufacturing research department to perform such developments."

Research Functions Explained

As shown (chart below), the department is made up of seven sections, each having its own supervisor and specializing in definite manufacturing processes. Policies, projects, and general supervision are administered by the department chief, assistant chief, and staff administrator. Secretaries and a stenographic pool are available to all personnel.

The chemical section investigates processes relating to the cleaning of all materials, drawing compounds and cutting oils for sheet metal and machine operation, specifications of anodic treatment, plating processes, etching for spotwelding, pickling solutions for removing scale after heat treatment, specifications of finishes, prevention of corrosion, industrial chemicals, and cements and adhesives.

This section, working in co-operation with an outside vendor, has been responsible for the development of a new cutting and drawing oil which is saving the San Diego division alone approximately $100,000 a year. It also has been responsible for the development by a large oil producer of a spark plug anti-seize compound which has been described by those who have used it as "worth its weight in gold." This compound, which has successfully eliminated all spark plug seizing difficulties, has just been approved for use by the Air Forces.

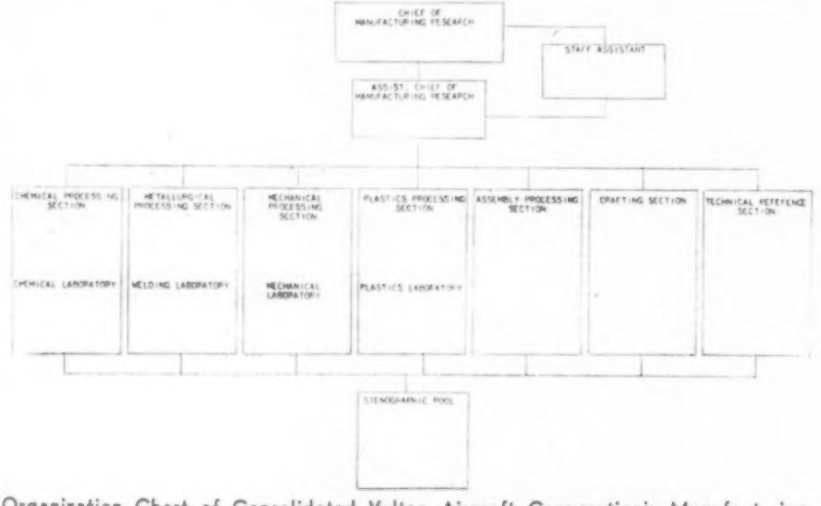
The work which this group has done in co-operation with outside vendors is characteristic of the manner in which manufacturing research attacks some of its problems. It has established a policy that when such problems can be referred to specialists, the development work should be conducted in co-operation with them.

The technical reference section is in charge of the technical library which contains books, magazines, reports, and other literature relating to manufacturing processes. Manufacturing research bulletins are issued periodically to keep personnel in all divisions informed of new developments originating in this section.

The metallurgical processes section is responsible for investigation of the latest methods of heat treatment; torch, resistance and arc welding; copper, silver, and aluminum brazing; powdered metallurgy; metallic finishes; and the treatment of cutting tools by plating, nitriding, and other methods.

The metallurgical section has been successful in introducing in production a nitriding process which has greatly increased the life of cutting tools. This group has also been responsible for the installation of furnace copper-brazing methods for aircraft parts which has saved a great number of man-hours and a large amount of material.

Tools, machines, and layouts for new manufacturing processes are designed by the drafting section. This



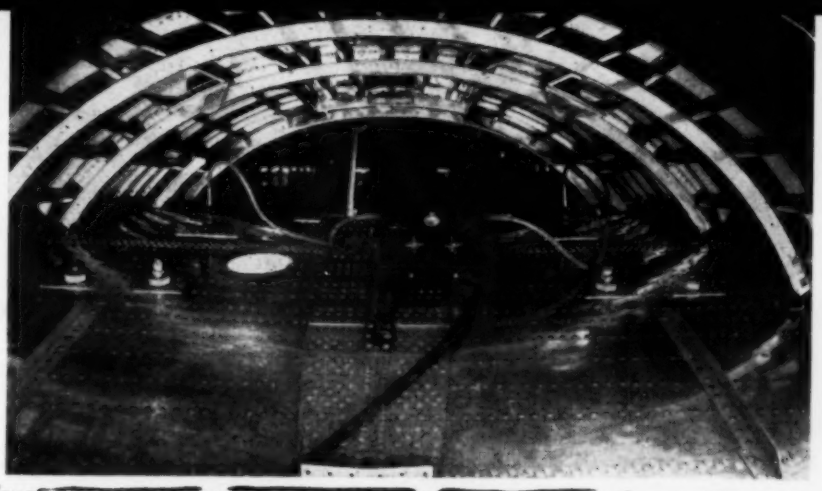
Organization Chart of Consolidated Vultee Aircraft Corporation's Manufacturing Research Department.

group also provides illustration for reports and bulletins.

The mechanical processing section concerns itself with problems relating to cutting and forming operations in sheet metal; jigs, fixtures, and hand tooling practices; drilling; filing; identification; stamping; burring; sand blasting; and tumbling.

The assembly processing section investigates projects relating to the breakdown of assemblies and panels to facilitate production. It also determines the best methods of fastening which includes studies of rivet dimpling, countersinking and coin pressing operations, metal cementing, spotwelding, riveting machines, and all types of rivets.

The plastics section investigates the application of new plastics and fabricates prototype parts to meet specified requirements. It has introduced the use of plastic form blocks for hydropress and stretch presses, saw trim fixtures, and router fixtures. Portable oxygen bottle holders have been improved by the design and fabrication of a laminated plastic part which has replaced a metal item previously used. It has also successfully produced a light weight plastic ball for use in check valves which is not only more economical but which has eliminated all the trouble formerly encountered with varnished cork balls.



FUEL CELL VENT SYSTEM LEAK DETECTOR developed through research requires only 15 minutes per cell, saving several hours on each plane if leaks occur. Through instrument compressed air is reduced from 90 lbs. to 3 lbs. pressure. Fuel lines are charged to 3 lbs. Drop in gauge indicates leak.
—(Convair Photos.)

RESEARCH DEPARTMENT ACCOMPLISHMENTS include new anti-seize compound and a thermo-setting phenolic casting resin. Compare spark plug at left, lubricated with ordinary mica-base compound, and one at right lubricated with new material. Both had 100 hours of flight. New casting resin makes smooth mold which eliminates scraping and finishing.

How Projects Are Handled

Requests for information and investigation may originate in manufacturing research, with management, or flow in from process engineers established at each of the corporation's twelve divisions. These engineers are the liaison between manufacturing research and the various manufacturing departments scattered throughout the United States. As projects are completed and reports written, those of general interest are distributed to all process engineers who pass them on to the various departments whose operations they concern.

When a request for an investigation is received, a project outline card is typed in quadruplicate. One copy goes to the investigating engineer and one to the group supervisor to whom the project engineer reports. The third copy is placed in a follow-up file according to estimated completion date, and the remaining copy is filed under the investigating engineer's name so that the distribution of work in the department can be ascertained at a glance.

A project outline card gives sufficient information for the engineer to understand the problems involved. It also serves to furnish an outline of whatever equipment, materials, and tests are required in order that the conclusions and recommendations will be based on sufficient data. At the same time, the introduction of extraneous information or unnecessary work is prevented. Should an investigation disclose the advisability of studying the project from an entirely different angle, or reveal related problems with potential value, the cards

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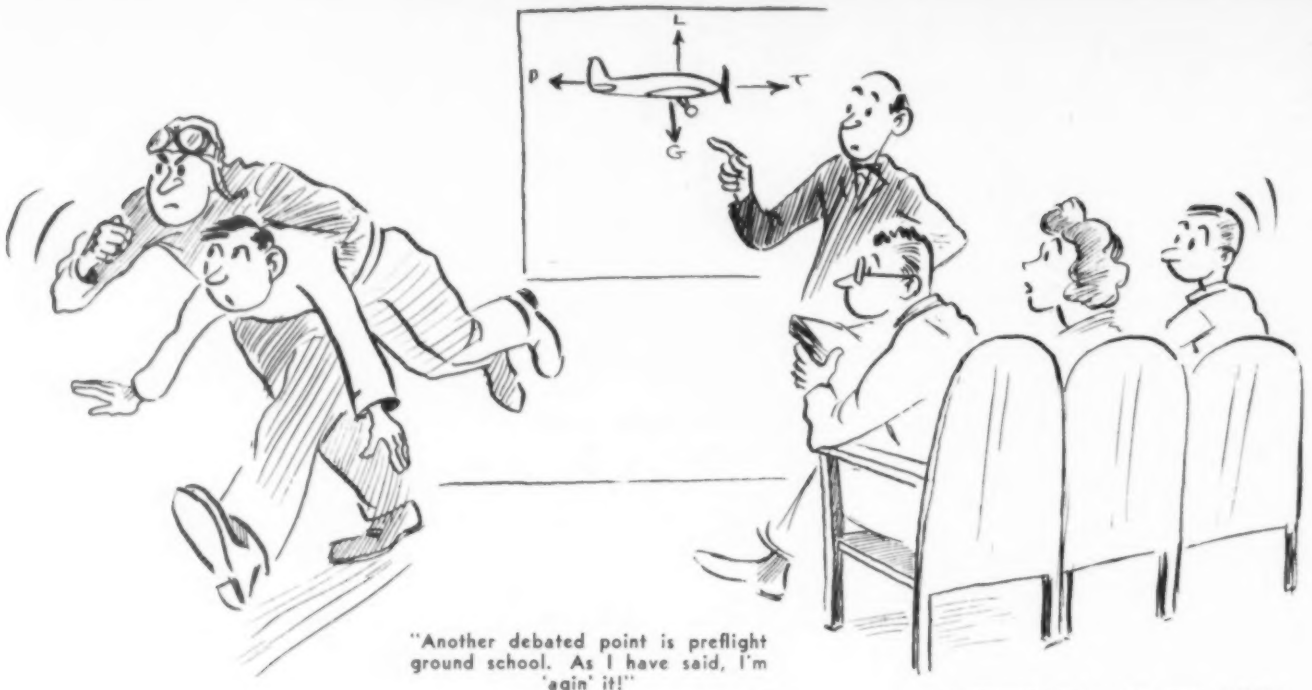


"Another debated point is preflight ground school. As I have said, I'm 'agin' it!"

—(Illustrated by Lt. Joe James, USNR.)

CONFESSIONS *of a Flight Instructor*

PART III

By A. H. KNOUFF
Lt., A-V (T), USNR*

THE real fundamental maneuver of flying is relaxation. You must get your student to relax before he can fly straight and level, turn, climb and glide. You may not call relaxation a maneuver, but remember the times you had to set her down in a tricky crosswind, or the first time you got caught and had to let down through a layer of clouds that seemed a mile thick. If it didn't take as much conscious effort to make yourself relax as it does to do a hesitation roll, you just ain't human.

Each time a student begins a new maneuver or meets a new situation, the old problem of relaxation will bob up again. When he gets out from under your wing, he will have to lick it himself, with the help of the lessons and practice you have given him.

Recently a young pilot landed a dive bomber too high and got a wingtip. If I hadn't seen it, I don't think I would have believed it. I'm a six-footer and can stand under the wing of one of these planes with ease. The landing gear is so wide, I doubt if you could upset it with a tank. I asked him what he did to pick up the left wing when it dropped. Sure enough he said:

"I pushed the stick forward (good, but not enough on a five-ton airplane) and to the right (not so hot). Then I kicked left rudder (Wow!)."

"Boy," I told him, "what you did was a cross-control spin twenty feet off the ground!" He would have been better off if he had let go of the controls entirely, but he just didn't have the background to overcome the feeling that he should "do something."

First Impressions Are Important

The time to start teaching a student to relax is when he walks up to you and wants to take his first flying lesson. He is sure to be a little excited. You know that he is going to push the controls all over the cockpit. (If he doesn't, look out for trouble later on.)

"The real fundamental maneuver of flying is relaxation."

What you do and say may be terribly important to his flying progress. One school of thought believes that you should tell him to attend ground school for a couple of months and then come around and see you again. This has several disadvantages, the first being that you can get awfully hungry in a couple of months. Worse, he will probably decide that if flying is so difficult and dangerous that he must go to school eight or nine weeks before he touches the controls, he had better look over his insurance first—or just not bother with it at all.

From his point of view, if he does come back to you he is going to have his head full of ideas, but no more conception of how to use them than when he came to you in the first place. He will have formed mental pictures which may be wrong, and the fact that you did not think it safe to take him on without such lengthy preparation is certainly not going to help him relax.

Personally, I usually say, "Okay, let's go," and start walking toward the plane. "Now, the easiest way to get in is. . . . Those are the rudder pedals. Put your feet on them, hold wheel with your left hand, and just leave your right hand in your lap.

*Opinions and assertions herein are the author's, and are not to be construed as official or reflecting the views of the Navy Department or the naval services.

Later on you'll use it on the throttle." There is another reason which you don't need to tell him—just try tensing your muscles with one hand dangling in your lap.

Physical relaxation helps produce mental relaxation, and to achieve this your student must be comfortable. Have him push one of the pedals all the way forward. If he has to stretch to do it, get some pillows behind him. Put some under him too, if necessary, but do all this with as little fuss as possible—stressing his comfort rather than the possible need for giving full rudder or any other extreme control. Now go on. . . .

"It works just like the rudder on a boat. Push on the left pedal and the nose moves to the left; push the right pedal and it moves to the right. . . .

"You know that highway curves are banked to keep cars from skidding. In an airplane you have no road; so you make your own bank, tilting the airplane with the wheel. You'll find it's perfectly natural when you hold the wheel at the top, with one hand. When you walk or run around a corner, you lean the way you turn. When you want to turn an airplane to the left, just lean that way and you will find that you will move the wheel as you lean and that your left foot will slide forward along the floor and push the left rudder-pedal. . . .

". . . I'll take off; then let you fly it in the air—but you keep hold of the controls all the time unless I say 'Let Go' . . . If I say 'Let me have it' or anything else, you keep on the controls so you can feel what I am doing, but if I say 'Let go' just relax with your hands in your lap and your feet on the floor."

Landing Can Be Easy

Notice three things that this patter tells the student without putting them into words, "Sure, you can fly. You are a normal human being, aren't you?"; "The controls of an airplane are even more natural than an automobile — just as natural as walking"; "You don't need to be afraid of the controls." The patter may vary, but its tone, and suggestion should get across these three points.

I have very seldom had to tell a student to "Let go." His first instinct, when he sees me touch a control, is to drop it like a hot potato, and I have to tell him to keep on it. But when I do say it, he knows exactly what I mean. He also knows exactly what I have said. The phrase is short and doesn't sound like anything else — two *musts* for anything you say to a student in the air.

Like so many things in flying, you can't make any rigid rule about when to let the student start doing the flying. For his own self-confidence and encouragement, the sooner the better; but the instructor must examine his own capabilities and experience to be sure that he can get out of anything the student may get him into—and do it without alarming the student. Give yourself a wide margin of safety. As you gain experience, you can let him take over sooner.

I usually say, "Okay, you just hold the nose where it is," as soon as I have established a normal climb, and make

"—and make a point of resting my left hand on my knee and looking out the window with my chin on my right hand—"

a point of resting my left hand on my knee and looking out the window with my chin on my right hand. What the student doesn't realize is that in this position my left hand is only a flick of the wrist from the throttle, and my right can be dropped to the wheel in the bat of an eye. He has probably forgotten that the plane even *has* rudder pedals; so he won't notice that my feet are still resting lightly on these important pieces of metal. When I have taken over for a moment to level off at about 1,000 feet, I give it to him again—this time with my feet on the floor—and tell him to follow a straight piece of highway or railroad, or to fly toward some prominent landmark.

Sooner or later he will begin to wallow all over the sky. Before it gets too bad, quietly tell him to let go of the controls—still looking pointedly out the window. If the ship doesn't settle down immediately, you can help it along surreptitiously with the rudder. Above all don't "ride" the controls. All you want to give the student in this lesson is an enthusiasm for flying, a feel of the controls, and —above all—relaxation.

Obviously some of these tricks cannot be used in a tandem airplane—which is one reason why I prefer side-by-side. You can talk to your student without an uncomfortable, voice-distorting gadget. You can actually see whether he is tense, and the sight of you taking it easy beside him is much more convincing than the word "relax" yelled through a tube.

I may have shocked some of you by implying that I let students start flying the airplane almost as soon as it is off the ground. If so, you will be still more shocked to learn that I usually let the student land on the first lesson.

Most students think they could take off by themselves, and fly the ship in the air, but they have heard landing is the "hardest part of flying." They have developed a subconscious fear of it. Letting him land on his first lesson (or letting him think he has landed), will dispose of this phobia right at the start. The longer it is put off, the stronger it will become. When you finally do start him on landings after two or three hours, he will think "here comes the bad part" and will become much more tense than if you had shown unconcern by giving him a landing on his first lesson.

Another debated point is preflight ground school. As I have said, I'm "agin" it. Ground school without practical experience may give the student conceptions which the instructor has to correct, as well as delaying relaxation of the flight instructor started to fly, he will have many questions which ground school can answer; and he has experience on which to base a better understanding of those answers.

Later on we may talk about the relaxation of the flight instructor concering the ground school, but now we just want our student to relax.

★ ★ ★

"You will be more shocked to learn I let the student land on the first lesson."

GEORGIA HELICOPTER

(Continued from page 33)

in the form of compressed gases instead of crankshaft torque. Either of these two engines could be placed in the fuselage and the compressed gases given off piped to the jet in the blade tip.

The outside type of engine is in an even more experimental stage than the gas turbine or free piston engine. It is called the athodyd, and combines the motor with the jet. With an athodyd installed at the tip of the rotor, no other engine is needed for flight. Furthermore, the athodyd is extremely light in weight so that its weight-horsepower ratio is well up into hundreds of horsepower per pound.

This odd power plant does have its disadvantages. It is very inefficient from a thermal standpoint. It just plain uses too much fuel. Its current development indicates an overall efficiency of about 5-6 per cent as compared with 20-25 per cent for a good shaft operated rotor. This indicates that it would use about four times as much fuel to develop the same horsepower as a conventional engine, but it must be remembered that a conventional engine must waste part of its fuel in transporting its own weight while the athodyd weighs practically nothing.

The athodyd has one other major disadvantage. It is a high speed jet and, therefore, operates most efficiently when moving at a high speed. In flight, whether moving or hovering, the tip speed of the helicopter blade is above 200 miles per hour. Above this speed the athodyd may operate with some efficiency. The rotor blade would have to be brought up to a good speed with an electric starter before starting the athodyd.

Professor Dutton and his associates at Georgia Tech have not decided which type of power plant is most practical for the jet helicopter. They are collecting data on all types of jet producers and are experimentally testing the data.

Future Prospects

While nine years have been spent on the development of the helicopter, there is still much to be done. Both the earlier work and the current work have been handicapped by the usual academic laboratory drawbacks, lack of money and manpower. However, a finished plane is nine years closer than it was when Professor Knight first hit upon the idea, and it may not be long before satisfying results of the research and experiments may be seen over the Atlanta airport. ★ ★ ★

PROF. DON DUTTON, director of the Daniel Guggenheim School of Aeronautics at Georgia Tech, is in charge of jet-propelled helicopter research.

RESEARCH PRACTICAL

(Continued from page 37)

are either revised or an additional set issued.

Upon receiving the project outline card, the investigating engineer enters its receipt in a record book containing notes on all the work with which he is involved. Detailed entries are made on each project, including all personal contacts, requests for information or samples, and all items requiring follow-up. In this manner work may be carried on by the group supervisor in case of absence of an investigating engineer, and a more systematic follow-up of all written and verbal requests is provided. The date of conception of any development is also established, and the information tabulated is used in writing reports.

Project reports are written on each investigation and a constant effort is made to insure their adherence to the best practices of report writing as exemplified by the concise English used by established technical societies and research organizations. Whenever possible, tabular data is presented in accordance with the recommendations made by the "ASTM Manual on Presentation of Data."

As an example of the manner in which a particular investigation might be handled after the project outline card has been given to the investigating engineer, we will take up the development of an instrument for checking fuel vent lines for leaks. The first step in this instance requires the engineer to familiarize himself with the problem existing in the shop. This he does by direct contact with the foreman, workers, and inspectors. After securing a clear picture of the problem, the engineer is free to attack it from whatever angle he desires. The accumulated experience of all the engineers in manufacturing research is readily available as well as an unlimited source of technical literature. If the problem so requires, he would be permitted to travel to any other division, company or university to secure first-hand information and to gain the benefits of discussion with recognized authorities.

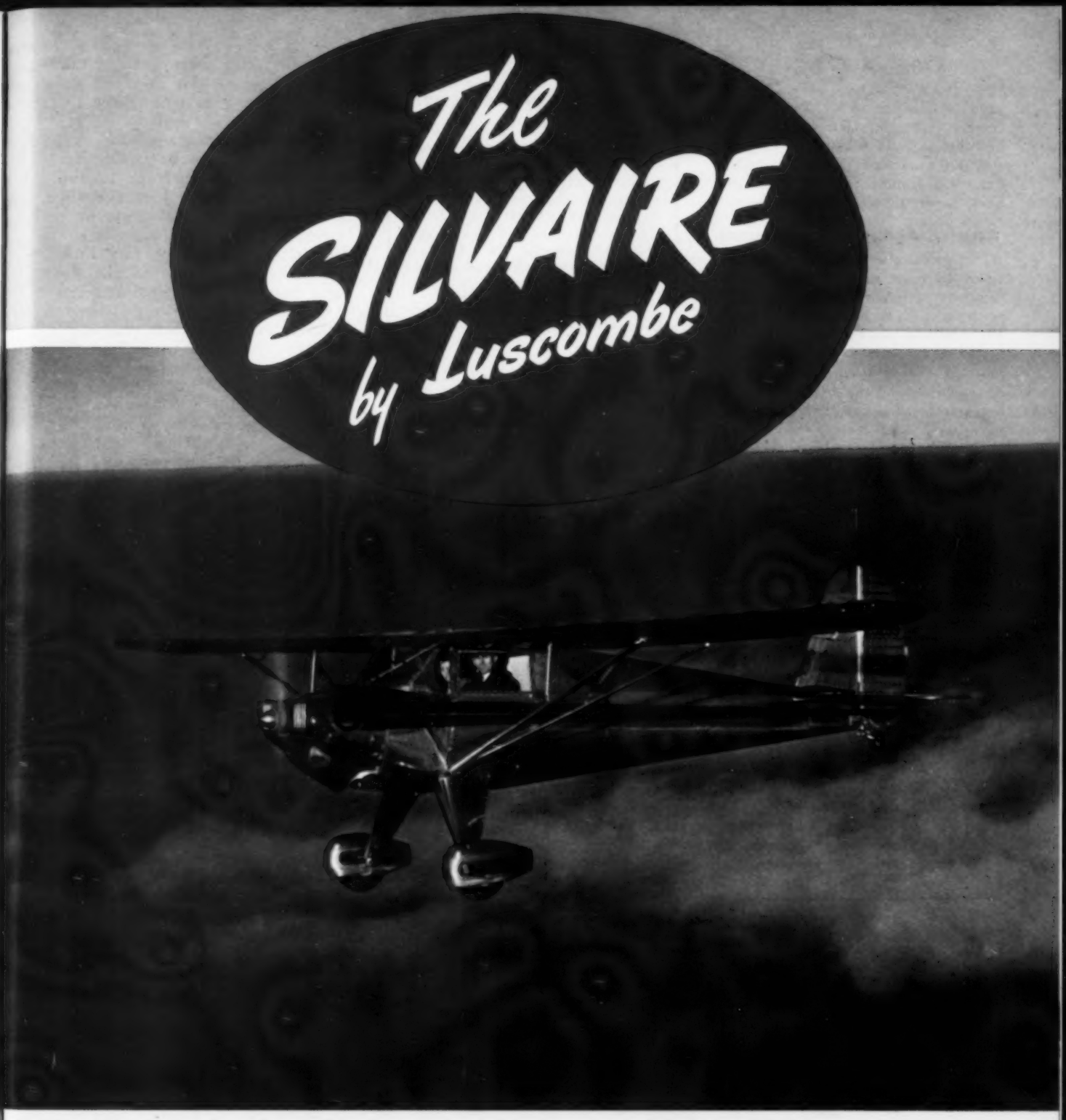
The problem of checking fuel vent lines for leaks, however, did not require extensive research before the engineer could sketch an instrument make up of parts which were readily available. This sketch was turned over to the drafting section where detailed drawings were made. Finished blueprints were then given to the pattern shop of the plastics laboratory and the instrument case was made of plywood covered with leatherette. In the meantime, the mechanical laboratory was assembling the gauges, valves, and tubing so that the final assembly would be facilitated.

Upon completion, the instrument was taken by the investigating engineer to the shop. With the co-operation of the foreman, it was placed under test in actual production. In this manner its value could be immediately established and minor modifications or adjustments made by the engineer. Then when its design, method of operation, and value are definitely established, a report covering every detail is written by the investigating engineer. This report is checked by the group supervisor and assistant chief for accuracy and completeness, and approved for distribution by the department head. Copies of the report are then forwarded to division personnel through the process engineers as a final step in the solution of the problem.

Because the investigating engineer must wait for the construction of apparatus, tools, samples, and information, it is possible for him to be working on more than one project at a time. It is general practice to assign as many as fourteen projects to an engineer, depending upon the nature of the investigations. This is recognized, however, as being too many for efficient departmental operation, and the general working average over a long period of time has been maintained at four projects per engineer.

The varied accomplishments of manufacturing research during its comparatively brief existence have proved highly valuable. To date, the department has been concerned with the production problems of vital warplanes. But when hostilities cease, research efforts will be turned to solving the problems which will arise in making the products of peacetime.

★ ★ ★



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LUSCOMBE AIRPLANE CORPORATION, TRENTON 7, NEW JERSEY

"$700" AIRPLANE?

(Continued from page 27)

time to comment on Mr. Wright's December statement, but in answer to his challenge at Oklahoma City for a $2,000 family plane, sent SOUTHERN FLIGHT a commentary by Peter Altman, Aeronca's consulting engineer.

Aeronca Agrees on Performance

"In connection with work now actively going on in the engineering department at Aeronca Aircraft Corporation, we will be ready to meet the requirements of Mr. Wright's suggested four-place family airplane in most of the requirements except the selling price, and the ultimate in landing characteristics is given by full-swiveling landing gears," Mr. Altman said. "The airplane known as the Aeronca Eagle incorporates comfortable seating for the family of four, with unusual visibility in all directions, combined with good inherent stability, performance meeting Mr. Wright's specifications and a noise level comparable to the modern airliner." Reduction of noise as it affects people on the ground requires an exhaust muffler and lower propeller speeds, he said, but both of these solutions "are definitely within the solution of the designer and are receiving careful consideration in the Aeronca Eagle."

Engines, Parts Expensive

"The $2,000 selling price for an all-metal family airplane is a good goal to work to, but based on a conservative production volume for the first few years after civil airplane restrictions are removed, it can be shown that several years will be required before costs can be reduced to attain this figure," Mr. Altman pointed out. "At present the cost of purchased parts such as engines, propellers, accessories, instruments, etc., represent about 30 per cent of the cost of the airplane. The airplane manufacturer does not have a great deal of control over these costs. It will be necessary to wait until the volume grows sufficiently to take full advantage of the desired machine tools. This time period may be reduced if by some compromises in design the same tools can be used both for aircraft and some fairly high production applications. This has been taking place in instruments and may soon be applied for other parts.

"The present cost of engines suitable for a four-place airplane having the desired performance is a good illustration of the final cost. Assuming that 150 horsepower is required and the cost is $6 per horsepower, we have an engine cost of $900. Add to this figure the other costs and we can easily see how we have to exceed the $2,000 selling price until prices for component parts not made by the airplane manufacturer are reduced.

"The advantages to be gained from full-swiveling castered type landing gears are not denied, and are no doubt highly desirable to allow cross-wing landing and take-off on single-runway airports. But at present very little information is available to the designer from which suitable designs can be developed and which the manufacturer can apply without encountering high experimental costs. Here the government experimental and research establishments can help materially by doing the fundamental work on this problem. Progress is being made — the nose wheel type landing gear is a fair solution, but not necessarily the best solution. It is, therefore, with pleasure that we noticed Mr. Wright's remarks that his office has assigned one of their experts to study this problem and we know that the industry will be looking forward with interest to the results of this investigation."

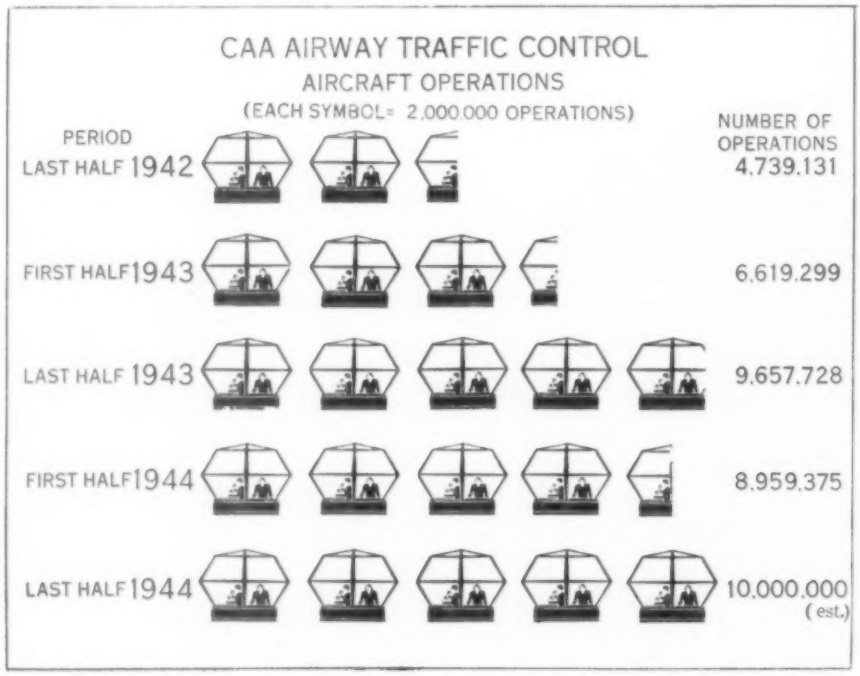
Co-operative Action Needed

Further comment was not immediately available, but it appeared that the manufacturers in general were (a) in sympathy with the need and value to aviation expansion of new designs and lower prices but (b) opposed to any government plans which might resemble the $700 airplane flop of 1935 and its damaging consequences to aviation. However, it was not clear why the Personal Aircraft Council of the ACCA and Administrator Wright could not have conferred prior to the release of his statement for the purpose of mutual understanding and co-operation. There is no practical reason why the Council, which represents the industry, and the CAA, which represents the users of aircraft as well as the government cannot function harmoniously and with mutual support for the inevitable expansion which is coming. Aircraft owners, pilots and users are not only going to become more numerous but more demanding to both the industry and the CAA. In recent months they have pressed CAA for a more realistic consideration of their problems and the CAA has taken steps to give them that consideration. Their next move will be to press the industry for better designs, better performance and better prices, and the industry's answer to their demands will determine the extent to which the market will expand.

Those who will do the buying and flying will be watching the outcome of the industry-CAA differences with great interest. ★ ★ ★

Two-Control Aeronca?

Engineering & Research Corporation of Riverdale, Md., has executed a contract giving Aeronca Aircraft Corp., Middletown, Ohio, the right to use the two-control system incorporated in the Ercoupe. It has been generally known that Aeronca was interested in a postwar two-control model.



U. S. aircraft movements have doubled since 1942, as this CAA chart shows.

MODERN AIRPORTS

And Airport Management

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Clarifying the Airport Plan

An Editorial

THERE are several points which need clarification in the current discussion of the Civil Aeronautics Administration's National Airport Plan. Everybody agrees we need more airports, but some quarters are confusing the issue either through misunderstanding or by opposing the whole project because of controversial features it contained when submitted to Congress.

The Plan lists a number of locations in each state and an estimate of the cost of developing an adequate airport facility for each location. The total estimated cost of all projects so listed by the Plan is $1,021,567,945, which is $21,567,945 in excess of the funds provided for in the Randolph Bill, HR 5024. Both the Randolph Bill and the Commerce Department's National Airport Plan would authorize the CAA Administrator to allocate Federal funds for the following purposes:

1. Construction work involved in constructing, improving or repairing (as distinguished from day-to-day maintenance of) an airport.

2. The construction, alteration, and repair of airport buildings other than hangars.

3. The removal, lowering, marking and lighting of airport obstructions.

4. The acquisition of any lands or property interests necessary either for any such construction or to protect aerial approaches.

5. For making field surveys, preparing plans and specifications, supervising and inspecting construction work, and any necessary Federal expenses in the administration of the program.

But—and this is where much widespread misunderstanding has occurred—it should be noted that while funds in the Randolph Bill would be available for any of the above purposes, the estimate set up in the National Airport Plan actually includes only the work in item No. 1. In other words, the cost of the remaining four items, plus the cost of hangars, must be added to the Plan's estimate for any individual project listed. In the case of a small airport, for instance, the cost of the other four items might well double the Plan's estimate, and the cost of hangars, which are not now mentioned as being eligible for Federal aid, would still have to be added.

In the first place Administrator Wright and other CAA officials have stated time and again that the Plan does not provide for each and every need on an all-inclusive, iron-bound basis. It is a start to meet such needs, and changes will be incorporated as soon as they can be considered on a practical basis, especially when the proposal comes up for adoption by Congress, where debate will naturally be exhaustive. Moreover, it is not a "new" plan, suddenly whipped into printed form—it is plainly labeled "fifth revision" and this means it is the fifth version of the original 1938 plan for airports. There will be a sixth revision, we can be sure.

One criticism which is of significant substance involves the lack of surveying and study which went into the project. The CAA has plainly stated that it did not have sufficient time, personnel and funds to select each site where an airport is needed, and draw up complete cost estimates for such sites. That, to be sure, deserves full consideration. How can the overall cost estimate be accurate without such specific information? The answer is that the CAA's estimates are as accurate as the time, personnel and funds permitted. In the Fourth Region, for example, the airport supervisor and his inspectors spent months on the survey. They are familiar with their Region because of past experiences, and, considering the time allotted for the survey, submitted as accurate a picture of the Region's needs as was possible. Approximations allow considerable room for adjustments, up and down. If a particular site does not become available, and another one has to be selected and improved for the same amount of money, the result can be much different than originally expected. Extended on a national scale, the difference can be vast. Congress has, however, appropriated huge sums for previous projects which were no more detailed, so there is ground for believing the CAA estimate to be reasonable as far as the Congressional attitude is concerned.

Another point which demands full appreciation concerns the National Airport Plan's relations to other projects for Federal aid. President Roosevelt undoubtedly has an airport plan of his own, but the New Deal chief isn't saying much about it. That something is in the wind was plainly intimated by Acting Secretary of Commerce Wayne C. Taylor, who told the Speaker of the House, in submitting the CAA plan, that "the Bureau of the Budget has advised that there is no objection to the submission of this report but that it should be understood that this advice involves no commitment as to the relation to the program of the President of the proposed National Airport Plan." In other words, the New Deal's postwar alphabetical hiring and spending bureaus probably will seek a controlling hand in the airport situation. This is a challenge to aviation. Will aviation interests press for the proposals of the CAA, which is charged by Congress to specialize in aviation's development and that alone, or will aviation interests stand off from the CAA's proposals to gamble on the prospects of a postwar dole system dictated by politicians instead of aeronautical experts?

By and large the National Airport Plan is not only worthy but urgently needs aviation's vigorous support. Well-founded criticism should be heeded as promptly as possible, and the CAA should exhaust every one of its limited resources to make the project as practical and business-like as humanly possible. Too much is at stake for aviation to fumble the ball at this critical moment. We need and must have, as soon as possible, an adequate, practical and orderly program of airport construction and improvement. The CAA's proposal now before Congress can and should fill that need. ★ ★ ★

U. S. Aid Proposed for Small Hangars

Already serious, the hangar shortage will become critical with peacetime aviation expansion. Congressman Randolph hopes for Federal aid to promote low-cost units.

By SWANEE TAYLOR

OUT of the welter of Federal plans for a bigger and better postwar aviation world there has yet to emerge any provision whatsoever for low-cost hangars to house the swarms of private aircraft that are to dot the peacetime skies. All sorts of elaborate preparations have been made for 3,000 more airports together with a nationwide airmarker system and other worthwhile projects calculated to make America truly a flying nation. Yet, oddly enough, little or no thought has been paid the matter of getting the planes in out of the weather.

However, the matter has not been entirely forgotten and there is a good glimmer of hope of obtaining Federal aid in setting up a private hangar building program all over the country. This hope, and without doubt the best bet, is contained in the language of the Federal Aid Airport Bill, (H. R. 5024), introduced last June in Congress by the Hon. Jennings Randolph (D. W. Va.).

Hangars Needed for Expansion

As has been long recognized, and duly deplored, one of the greatest deterrents to private flying has been the inadequacy of storage facilities for personally owned aircraft. Hangar facilities are woefully incapable of handling the airplanes in existence today, much less being able to accomodate the myriads of big and little ones promised with the peace. Wherever you go, to large airports or little Class 1's, you are sure to see halfdozen or more aircraft staked down out in the open. Whatever hangar space they have on the field is overcrowded with planes up on their noses and hanging from the rafters.

Immediately the war is over operators will launch programs of improvement and beautification that will attract customers and make them want to visit the airport often. After a taste of making money the operators are determined to clean up the old time desolation that formerly was characteristic of so many flying fields and go after new business with hammer and tongs.

Naturally they know better than anyone all about the acute hangar shortage. Hence nothing would please any operator more than to see his airport bordered with attractive personal hangars all full of airplanes from off his showroom floor. But there is little he can do to make this dream come true because of the investment involved. Each one of the hangars would represent an outlay of around $3,500 for anything except boxlike atrocities, while his return in rentals would be only about $150 per year on each hangar—scarcely interest on his investment.

Obviously a commercial operator cannot afford to swing such a deal no matter how great his desire to make his field the gathering place for private owners. Which leaves the hope of solution in the hands of the Federal and state governments. This would probably be in the form of long-term loans to the various townships and municipalities who, in turn, would build the hangars and rent them to the operator or the owner direct.

Randolph Pledges Support

As stated, the Randolph Bill serves as a good glimmer of hope that some plan along such lines can be realized. Randolph's proposed legislation provides among other things for ". . . the development, construction, improvement and repair of public airports in the United States, and for other purposes." That last, ". . . and for other purposes," is what leaves the door open for a program to finance the construction of thousands of individual hangars at airports in towns, villages and hamlets up and down the land. In short, the Randolph Bill might well turn out to be aviation's critically needed National Housing Act.

Recently in an exclusive interview, Randolph pointed out that the "open door" phrase was written in purposely to encompass just such overlooked needs as personal hangars and others that might come to light in the future. He further stated that the reason he did not specifically mention such a program was because the Civil Aeronautics Administration did not include personal hangars in their request to build 3,000 new airports.

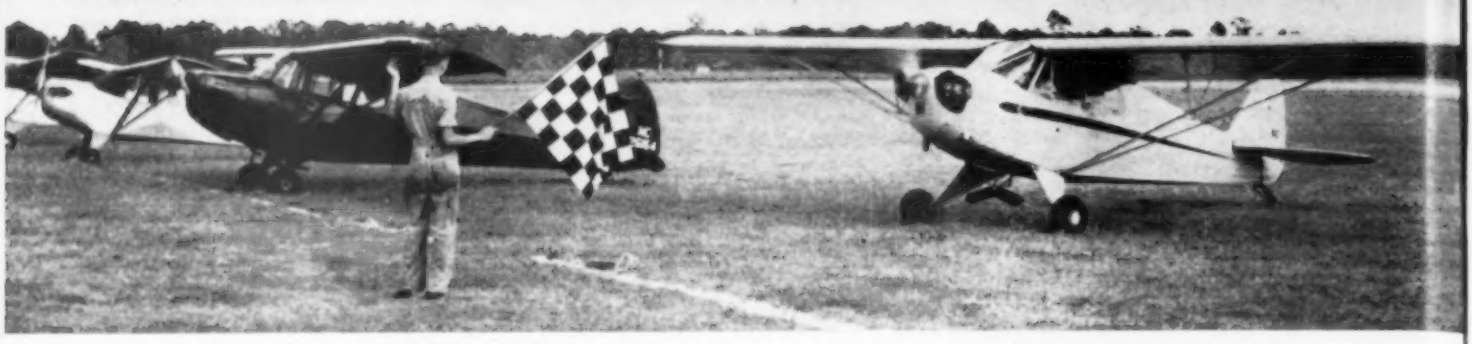
Not that the CAA is at all insensible to the need of hangars. To the contrary, through the years just preceding Pearl Harbor Marc Thompson, Chief of Building Design, Airports Service Division, made a thorough study of requirements and prepared for distribution a variety of construction plans ranging from little wooden "T" hangars to types suitable for metropolitan airports. Yet for all this effort, mention of personal hangars was not included in the request for an appropriation.

However, Jennings Randolph has long been a diligent friend of aviation—one of the best we have on Capitol Hill—and he has addressed a personal promise to SOUTHERN FLIGHT readers that when the hearings come up, some time early in the new Congress, he will see to it personally that any and all proposals for help in financing a program of private hangar construction will receive full and sympathetic consideration.

That, quite appropriately, leaves it pretty much up to the Personal Aircraft Council and other interested parties. Of one thing we may be certain, whatever does come of it will be in direct proportion to the amount of energy expended by those interested parties. ★ ★ ★

National Groups Join Missouri to Develop Model Airpark at Eldon

A model airpark for Missouri, which is being developed to provide necessary information on planning, financing, constructing, equipping, operating and maintaining similar airparks, has become a model for the nation, having the endorsement and co-operation of three national aviation organizations, according to the Missouri Department of Resources and Development. The Personal Aircraft Council of the Aeronautical Chamber of Commerce has agreed to co-operate in promoting the successful completion of the model airpark which is under construction at Eldon, Missouri. The National Aeronautic Association has also indicated that it will help to make the model airpark a success. The National Aviation Trades Association has endorsed the airpark as a worthwhile contribution to the advancement of the aviation industry. When completed, the airpark will consist of two turf landing strips, a small administration building, aircraft and automobile parking space and space for exhibits and demonstrations.



PARKING OF LOCAL AND TRANSIENT PLANES at Orangeburg, South Carolina, Municipal Airport, operated by Hawthorne Airmotive, is facilitated by linemen who meet all ships with standard Army "follow-me" checkered flag. White line indicates wheel positions. —(Hannum Photo.)

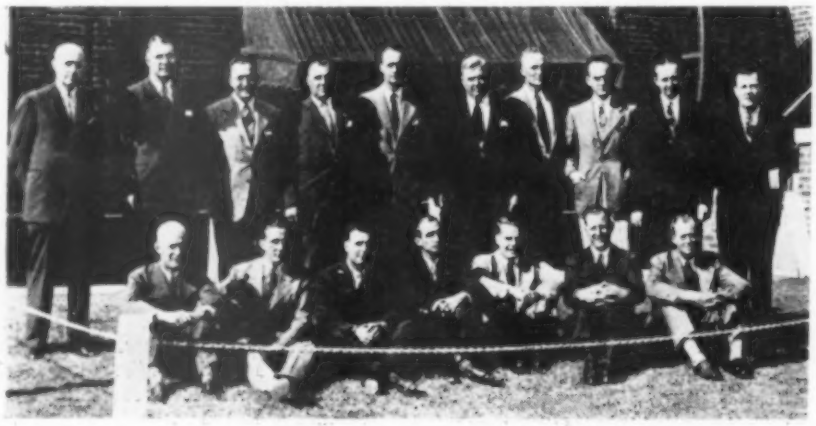
Alert Airport Service Brings More Customers

By BEVERLY HOWARD

President, Hawthorne Flying Service.

THERE'S been a lot of emphasis recently on how one of private flying's greatest postwar needs will be improved service to transient pilots. Maybe a lot of private pilots who squawk at indifferent line service are a little too critical, but when you remember that the people able to afford an airplane have become used to courteous, efficient, and speedy treatment when they pull into a filling station, you can understand their complaint. The last thing they've ever had to do is get out of their car, hunt around a garage and persuade someone to put ten gallons of gas in their car. Since this is the case at many airports, their complaint is legitimate.

When Hawthorne Flying Service started its first operation on the Charleston, South Carolina, municipal field, we soon realized that part of our business was the sale of service, gas and oil, and our operations were geared to that realization. Our emphasis on good service paid off in many ways. We soon were doing more gas and oil business with north-south travellers than any other field between Washington and Florida. From a dollars and cents point of view this paid off well.



HAWTHORNE'S KEY OFFICIALS: Back row (left to right), Charles L. Howard, vice president; A. W. Greeson, Jr., Greensboro, N. C.; W. R. Baldwin, treasurer and manager, Orangeburg, S. C.; W. Ted Gannaway, sales training director; Beverly E. Howard, president; Richard O. Person, comptroller; J. Addison Ingle, insurance consultant; Edward N. Hovis, Greensboro manager; Walter P. Phipps, vice president and Columbia, S. C., manager; Joseph J. Mitchener, Jr., airways manager. Bottom row (left to right), Ralph C. Crocker, airmotive manager, Orangeburg; Page Winchester, Columbia maintenance superintendent; Sam R. Monschke, general superintendent of maintenance; Lee Borie, Rocky Mount, N. C., manager; William D. Strohmeier, public relations director; M. Berley Kittrell, aero supply manager; and Claude Rinehardt, Columbia flight director.

The indirect benefits were even more valuable. We acquired a reputation for service which is one of the best assets any business in aviation or not, can have. Our service to local owners undoubtedly encouraged a lot of private owners to keep their airplanes where they might have sold them. We couldn't help but feel that many other operators saw owners lose interest because the service they received was not what it should be.

The cost in time and effort to build up this end of the business was practically nothing. After all, servicing a transient airplane requires just so much time whether you do it the minute a plane lands or whether you let the owner stew around for fifteen minutes while your mechanics continue tinkering with another airplane —or finish their cup of coffee in the adjoining restaurant.

Prompt Service Pays

The one basic policy which we inaugurated was having a lineman on the line at all times ready to direct any strange plane to the gas pit before it even reached the ramp. Our general motto was "the cokes are on us if you beat us to the gas pit." That one service makes a whale of an impression on transients who are so used to taxiing all over the airport looking for the pit.

I remember one pilot who came into our field and even five years later still expresses his amazement at our treatment of him. He was in a Cub bucking a strong headwind and being low on gas didn't bother to circle the field. He landed on the far end of the runway and taxied directly to the hangar. His plane was similar to the Cubs we were using for local training, yet our linemen identified the ship as

SPACIOUS VISITORS' LOUNGE, part of which is shown in this photo, is part of Hawthorne Flying Service's major improvements at the Columbia, S. C., Municipal Airport. Note cleanliness, attractive sales counter.
—(Photo by Jimmy Price.)

a visitor and had the pilot spotted at the pit without any confusion.

Other little things also helped. The windshield was always wiped. Linemen were instructed to assist with baggage, to help the ladies out of the airplane and always greet the pilot with a query about his servicing needs, oil requirements and instructions as to where the office and restaurant were. The linemen also explain transportation facilities into town, and where possible an auto is furnished.

Besides finding that this kind of treatment paid off in profits, we felt that, to justify our franchise with the city to operate their airport, we were obligated to make a good impression on visiting pilots. After all, many pilots, merely passing through, never see anything of a city but its airport. Their impression is based entirely on the treatment they receive by the city's local flying service. We felt it our duty to Charleston to leave a pleasant taste in visitors' mouths.

After Pearl Harbor, the Army took over Charleston's airport and our flight operations were curtailed, but for many months afterward the Army retained us to service their airplanes, which we considered a distinct compliment and a tribute to our attention to servicing methods.

Mechanics Aren't Greeters

Since then Hawthorne has established branches at Rocky Mount, N. C., Greensboro-High Point, N. C., Fayetteville, N. C. and Orangeburg municipal airport, S. C., as well as retained its large operation at Columbia, S. C.

Within the limitations of wartime man-power shortages we have endeavored to maintain our line service on a high grade and have incorporated some additional features.

First we have come to the realization that the lineman is one of our most important employes. After all, he is the first man with whom a transient comes in contact. As in a hotel, a visitor is impressed or not by the treatment he gets in the front desk. We have come to the inevitable conclusion that the work of servicing aircraft should be removed from mechanics' duties to avoid interrupting their other maintenance work. Our linecrew payroll may seem out of line with other operations, but we're convinced it pays off. As an example, of ten employes at our commercial base at Orangeburg, three are linemen.

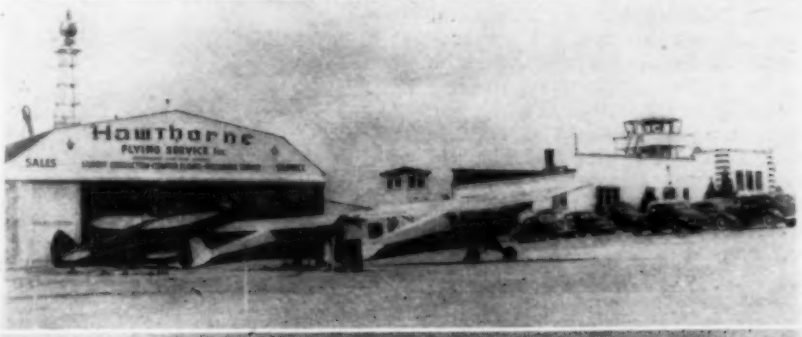
Orderly control of aircraft on the ramp is another fetish of ours. Instead of parking airplanes helter-skelter anywhere near the hangar, we have laid down white parking lines at all our bases, with cross marks for spotting the wheels. Ample tie-down ropes are located at each station. Every effort is made to have a lineman, carrying a standard black and white checkered flag, meet every airplane before it reaches the line. Normally the plane is directed to the parking station, but before the pilot cuts his engine, gas and oil requirements are ascertained and if immediate service is needed the pilot is directed to the pit.

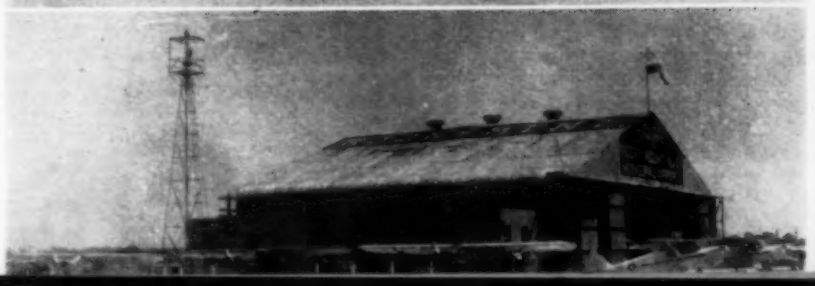
All visiting ships are immediately tied down after servicing, regardless of how short the stop. All aircraft whether local or transient are met by a lineman. We make every effort to let the transient know that his plane won't blow away while he's in town.

We see some definite benefits to this operation. For one thing, it cuts down tattered wing-tips, since taxiing accidents are practically eliminated. In addition, the line presents a neat, orderly, business-like appearance to visitors.

All these features of our operations point to our firm conviction that an airport operator is just as much in the gas and oil business as he is in the business of giving flying instruction. After the war, when personal airplanes will have greater speed and longer range, transients will be in a better position to pick their refueling points; and many a pilot will go out of his way to land at a field where he knows he's welcome and where he can get gassed in a hurry. ★ ★ ★

HAWTHORNE FLYING SERVICE facilities at three different airports are pictured below. Top photo shows the Columbia, S. C., Municipal Airport, Walter Phipps, manager; middle is Greensboro-High Point, N. C., Airport, Edward N. Hovis, manager; bottom is the Rocky Mount, N. C., Municipal Airport, Lee B. Borie, manager.





Excellent maintenance at this new airport got off to a good start when emphasis was placed on drainage. White line shows easy downslope from landing field leading to small embankment protecting field from outside water. Pipes carry water away. —(CAA Photo.)

AIRPORT MAINTENANCE

PART I

EARLY REQUIREMENTS

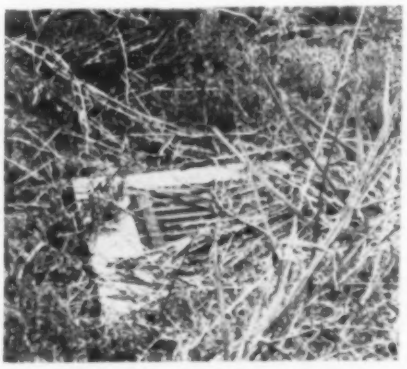
Airports need careful maintenance as soon as they are completed. Drainage and protection of bare soil will pay dividends in later years.

THOSE communities that are fortunate enough to have an airport should be vitally interested in the upkeep or maintenance of their airport, for without proper and timely maintenance they may lose a large portion of their investment and allow the airport to become dangerous or hazardous. This article is the first of several on Airport Maintenance and will deal with the importance of early maintenance. An attempt will be made to point out the savings that may be effected by making repairs as soon as trouble is indicated. Succeeding articles will be devoted specifically to the maintenance of turfed and paved areas.

Need for maintenance on an airport begins the day construction ends and it is indeed a wise public official who recognizes this fact and prepares to meet it. Arrangements should be made to make maintenance the responsibility of a full-time employee, with such additional help as may be needed from time to time. The old adages "Large streams from little fountains flow; tall oaks from little acorns grow," "A stitch in time saves nine," and "Make hay while the sun shines" certainly apply to airport maintenance and especially so to newly constructed airports.

The happy combination of a fertile, stable, quick-draining, non-eroding soil is rarely ever found on any one airport site. Therefore, it is necessary to work hard to maintain an airport while overcoming the deficiency caused by the lack of one or more of the above desirable qualities.

Following the completion of construction, it will take some time before a good permanent turf can be established—possibly two or more years and it is during this period that an airport is subject to serious damage from wind, rain, and traffic. It is during this period that maintenance is the heaviest, and it is during this period that early and constant maintenance will save large expenditures later.



LACK OF MAINTENANCE around catch basins renders them useless. This grate will clog during next rain. —(CAA Photo.)

Ordinarily, the most serious erosion from wind occurs soon after the airport is completed or before a satisfactory turf is secured. Drifting sand and dirt will dune or ripple on the landing areas, build up around scattered vegetation or weeds or along fence rows and markers, and drift into and clog storm sewer inlets and drainage ditches.

If weeds appear in the midst of young grass and hillocks of sand begin to form around them, care must be exercised in the elimination of these weeds and hillocks, so as not to disturb the start of grass or turf. If this operation is too extensive for hand operations, careful blading with the blade held high can be tried, or the area may be leveled by using a spike-tooth harrow with the teeth laid down as a drag.

Protection for Drainage

It is likewise true that the most serious damage from water erosion occurs before a statisfactory turf is secured on an airport. The lack of vegetation permits water to run off rapidly, to concentrate and form surface or slope washes, to clog inlet grates and silt storm sewer lines, any one of which, if not corrected, will grow more serious with each succeeding rain. Airports are by necessity constructed on wide, easy contours. If water is permitted to change this, the field becomes a hazard. The formation of surface or slope washes can often be stopped by small check dams of sod across such concentrations or washes, provided this opera-

tion is done early enough to prevent a definite run-off pattern from forming. These small check dams will have a tendency to slow up and spread out any concentrated flow of water.

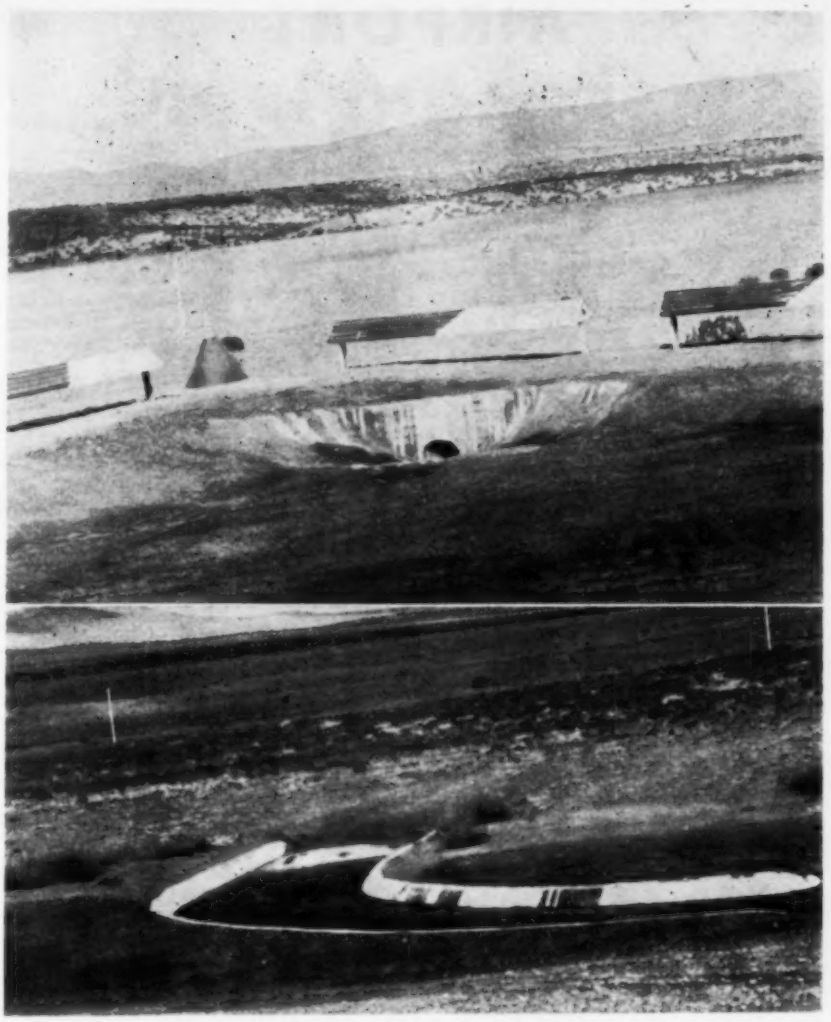
It is before a grass covering or turf is secured that the greatest erosion on embankment slopes and around outfall structures occurs, which, if not corrected after each large rain, will grow larger with each succeeding rain and will soon become a major and expensive item of repair. A few yards of dirt or rock placed here or there may prevent the replacing of thousands of yards later. Slope erosion can often be controlled by building a levee or berm along the edges of the embankment and leading the water off by means of paved gutters or drainage pipes. A concentration of water should never be allowed to flow uncontrolled down the slopes of embankments.

Destroy rodents such as moles and gophers, to keep the field in a smooth condition and to prevent erosion from this source.

Traffic ruts should be watched during this period. If allowed to form, they will often create channels and change the normal flow of surface water or they will impound water and soften the surrounding area. These ruts often become hazards to landing or taxiing aircraft. Keep them smooth.

In keeping a seeded or sodded field smooth, judgment should be used as whether to employ drag or blade equipment or fill the depressions with imported or borrowed material. Most times it is better to haul in dirt to check or fill washes and smooth an area, than to disturb a starting growth or turf with a blade or drag.

The storm sewer pipes should be inspected by the use of flash lights or mirrors to see if there are any obstructions. Silt, if found, should be removed, as it reduces the capacity of the pipes. Methods similar to those employed by sanitary sewer departments for cleaning sewers should be followed.



TWO EXAMPLES OF GOOD INSTALLATIONS, these photos also show how difficult problems were solved. At top is controlled slope run-off. Note berm along edge of embankment. Lower scene is of a paved lead-off gutter, with oiled gutter section. These are on edge of high earthwork, as indicated by white pole in background.
—(CAA Photos.)

UNCONTROLLED RUNOFF resulted in this serious slope erosion. Compare this scene of destruction with the well-preserved slope at top of opposite page.
—(CAA Photo.)

A small but important item of maintenance is keeping the grates of catch basins clean. Construction debris and mower cuttings will float down and clog a grate very easily. If this is not removed, this drainage structure will become inoperative. Water will then pond and overflow across the runway or taxiway or will cut a by-pass to the next structure, which in turn will soon clog, and soon the whole drainage system become unbalanced or put out of service. A good policy is to patrol a drainage system during a heavy rain or keep the grates clean and certainly to clean them after each rain. Trash should not just be pulled off a grate, but must either be burned or hauled away to keep it from floating back with the next rain.

Some mistakes have been made in installing catch basin grates which were difficult to keep clean because the openings were too small and would catch grass and debris. When such grates are encountered, it may be a good idea to make these openings larger, but never permit an opening large enough to catch the tail wheel of a small airplane.

It is during the period of securing a turf that weeds have to be fought most diligently, otherwise the weeds will choke or hinder the growth of such turf. Most turf grasses spread better if kept mowed. At any rate, any vegetation much over twelve inches becomes a definite hazard.

In summarizing, it is again stressed that any expenditures for constant patrol and maintenance will greatly offset the expenditure that will have to be made later to correct accrued damage. ★ ★ ★

(Next month: Maintenance of Paved Areas. This important series is the work of Fourth Region CAA engineers whose area covers practically all kinds of terrain, soil and weather.)

★ AIRPORT MERCHANDISING ★

By DUDLEY M. STEELE
Manager, Lockheed Air Terminal

LAST month's column announced our contest for the best ideas on "The Airport Revenue Dollar," for which we're offering $200 in awards. Beginning with this column, individual revenue-producing methods will be discussed in some detail. This month we deal specifically with airline revenue.

Position of Airlines

For many airports airline revenue is one of the largest, if not the largest, sources of revenue. This is not economically sound. Revenue from airlines, unless there are conditions making it impossible to secure revenue from the public, should run somewhere between 25 per cent and 40 per cent of the total revenue dollar. The balance of the revenue dollar should be made up of rents from other airport tenants, the sale of aviation gasoline and oil, and miscellaneous revenue from the public through coffee shops, dining rooms, garages, parking lots, etc.

Airline revenue and the charges to the airlines by airports are ticklish and delicate subjects. There is no question but that in some cases airlines are paying far less for services today than those services are really worth. This writer knows of instances where airlines are only paying $25.00 per month per schedule. This is too low, and the airlines themselves should take steps to adjust a condition which is obviously wrong and which they know does not permit an airport to obtain anything like the revenue it should derive for the use of the terminal. On the other hand, the rates can be too high. Charges made by airports for the airlines' use for landing fees and other services which the airport renders can be adjusted upward to the point where finally the airlines simply cannot pay. Airport management generally should, after a number of years of operation, begin to realize that airline revenue cannot possibly be expected to come anywhere near paying the operating cost of an airport. To keep adjusting the airlines' rates upward every time the maintenance costs increase is fallacious.

Where new contracts are being entered into between airlines and airports, or where old ones are being renewed, the airlines prefer a sliding scale of charges based on their activities at the terminal. They are willing to enter into contracts and pay a flat sum per month for sometimes the first one, or the first two, or the first three schedules; a lower figure for the next two or three; graduating downward for the next two or three; and then a flat figure of around $25.00 per month for all schedules thereafter. In some instances these figures are higher than the ones now being enjoyed by the airport; in others, they are approximately the same. It is easily understood why the airlines wish to come as near as possible to having a standard charge at all airports. They can more accurately estimate their annual expense budget, if this is accomplished.

Public Revenues Essential

Rentals for office space, whether they be on the ground or second floor, and for ticket office space are fairly generally known. The rates will have to vary, however, depending upon the cost of the facilities offered to the airlines. In some cities, the administration building is expensive, probably more so than is actually needed. In this case, it is unfair to attempt to amortize the building and obtain revenue based on its actual cost when that cost is out of all proportions to the actual needs. In other cities, the cost of construction may be sufficiently low to permit charges that would amortize the cost of the building over the customary period of time.

All airport managers should get one idea fixed firmly in their minds and that is that they cannot expect to obtain enough money from the use of their field by the airlines to pay their operation costs. If they recognize this, they will then look for other sources of revenue, and having found them, put them into execution, and the situation will become healthier as time goes on.

This writer believes that when an airline carries 1,000 passengers out of a terminal and likewise brings in 1,000 passengers, for every passenger going out and coming in one and one-half other people will come to the terminal to see them off or to greet them on their arrival. It is this group, plus the actual passengers arriving and departing, that offer the airport manager an opportunity for displaying wares which the public will use and pay for. When we talk about airline revenues, we must consider that while the airlines themselves pay for the use of the field, they also bring passengers and the passengers' friends to the terminal. If airport managers do not take advantage of this fact, they are definitely allowing money to slip through their fingers. An airport which is completely barren of anything except perhaps a coffee shop, or some other form of service to the public which is not up to par, cannot expect the public to leave any of its money in the airport till. If there is a coffee shop, it should be located conveniently, where the patrons can see the terminal's activities. It should be clean and neat and serve good food.

Selling Job Needed

Take a leaf from the railroads' book. Visit a railroad terminal. See what they provide for incoming and outgoing passengers and their friends. You will find there many ideas. Then in the quiet of your respective homes at night, pick up the daily newspaper. Look at the downtown department stores' advertisements. These advertisements are designed to attract the attention of women, who are intrigued by what they see and the values offered and then go downtown to the stores to buy. This advertising costs the stores many thousands of dollars per year. They do it to get customers to come into their stores in the hopes that after they have done so, they will buy something. Now take a look at the airport. You do not have to advertise. Your potential customers come to your terminal every day — in some cases, in dozens; in others, in hundreds; and in still others, in thousands of passengers, plus their friends. The airlines are largely responsible for bringing these people to the field. Why not then consider what you can do for the public that will permit them to utilize some service which you can provide and for which they will pay?

Do a sales job with your Airport Commission or those in charge of the policies of the airport. Try to sell them on the desirability of having such services provided with either the city operating them or leasing certain facilities to private operators.

In next month's column the important question of the sale of gasoline and oil will be discussed in some detail. See you then. Meanwhile send in your airport revenue dollar for that contest we started last month. It's simple. Just figure the percentage of revenue your airport receives from various sources, be sure the percentages total 100, and send it to us, P. O. Box 750, Dallas 1, Texas. We're offering $200 in prizes. ★ ★ ★

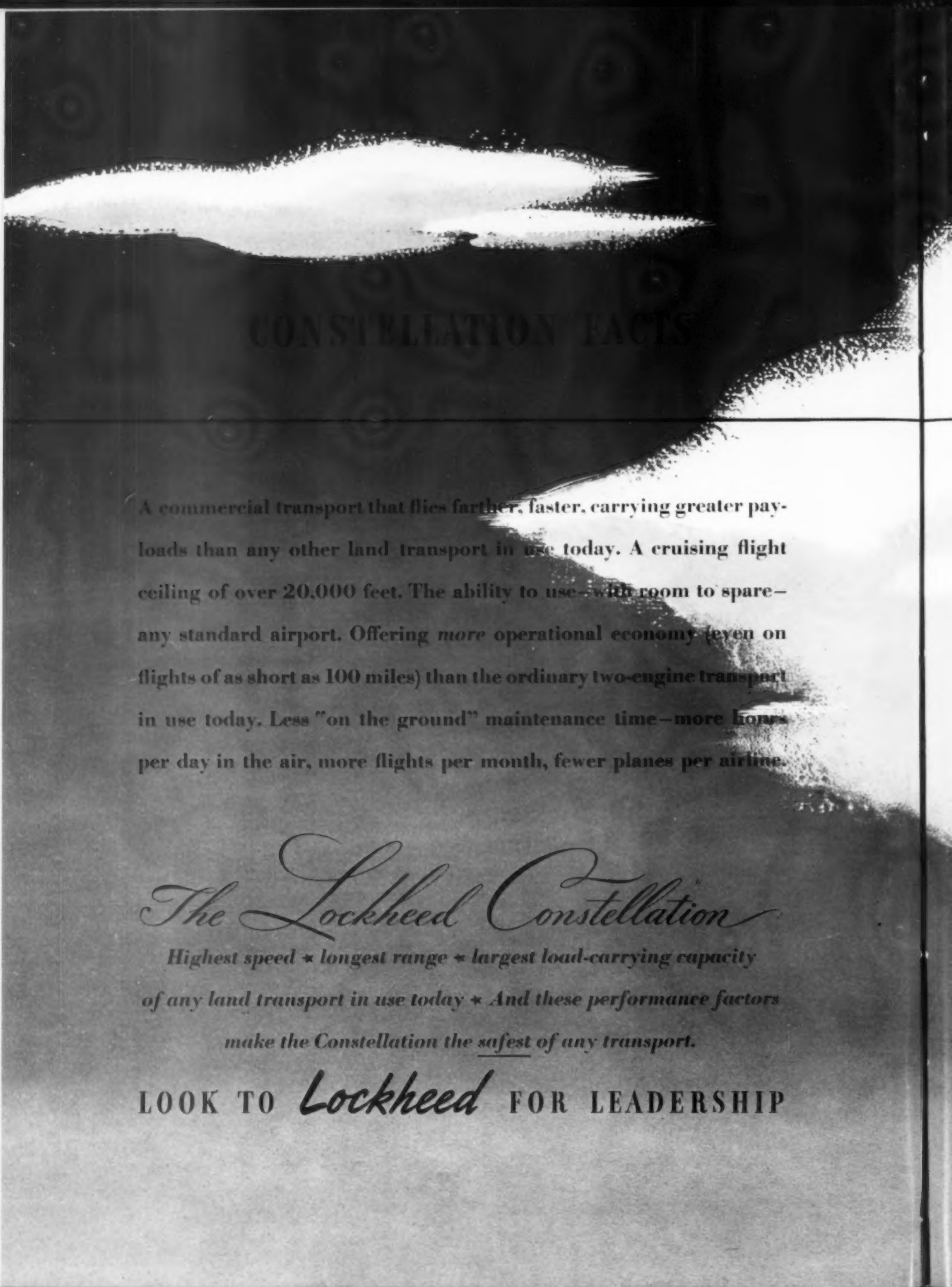
Highway Bill Enacted Without Flight Strip Construction Provision

Final passage and presidential signing of the $1,500,000,000 Federal Highway Act occurred last month with earlier provision for flight strip construction eliminated. The Civil Aeronautics Administration, Secretary of Commerce Jesse H. Jones and many aviation interests had opposed the provision under which the Public Roads Administration would have directed flight strip construction.

LEADERSHIP LIKE LIBERTY ISN'T INHERITED

Industry leadership is the product of vision and courage and skill; of seeing the future from afar, of fighting toward an ideal, of directing men and machines to the fulfillment of a onetime dream. This is the formula. And because leadership, like liberty, can't be inherited, the formula must be applied unceasingly—year after year—to keep such leadership in force. Thus—in their years—have evolved proud Lockheed names: Sirius, Orion, Electra, Vega, Lodestar, Hudson, Lightning P-38. Thus today the Lockheed Constellation, flying for the Army Air Forces, admirably maintains this tradition and is itself a vivid forecast of greater Lockheed planes to come.

The Lockheed Constellation



A commercial transport that flies farther, faster, carrying greater payloads than any other land transport in use today. A cruising flight ceiling of over 20,000 feet. The ability to use—with room to spare—any standard airport. Offering *more* operational economy (even on flights of as short as 100 miles) than the ordinary two-engine transport in use today. Less "on the ground" maintenance time—more hours per day in the air, more flights per month, fewer planes per airline.

The Lockheed Constellation

Highest speed * longest range * largest load-carrying capacity of any land transport in use today * And these performance factors make the Constellation the safest of any transport.

LOOK TO *Lockheed* FOR LEADERSHIP

QUESTIONS

Q. I never see Lockheed's Constellation at our airport. Why?
– James S., Bangor, Me.

A. *All of the Constellations completed so far have been turned over to the U. S. Army Air Forces and are being used for long-distance and overseas transport.*

Q. What are the speed and rate of climb of the Constellation?
– Theodore Zielinski Jr., Milwaukee

A. *The Constellation cruises at more than 300 m. p. h. Fully loaded it climbs 1/3 mile per minute.*

Q. Pilots of the Constellation must be supermen! How can they handle a plane with such big control surfaces?
– Ernest S., Tampa, Fla.

A. *As a matter of fact, piloting the Constellation is not tiresome at all. Power boosters actually do the work of moving the rudders, elevators, ailerons and flaps at the pilot's bidding. However, the plane can be flown easily by manual control.*

Q. Is the Constellation as big as our biggest bombers?
– Sgt. Jack K., Ft. Benning

A. *Constellation is approximately same size as our largest bombers.*

Send in your questions... Address: Lockheed Aircraft Corporation, Department 69-55, Burbank, California

LOCKHEED

FOR NEW WORLD STANDARDS IN AIR TRANSPORTATION
LOOK TO *Lockheed* FOR LEADERSHIP

THE AIRPORT and Personal Services

A clean-up campaign for airports would go far to improve business. The public deserves more consideration than it gets at many fields.

By JOHN H. FREDERICK

AIRPORTS may be regarded as service institutions by airline passengers, as was discussed in last month's article, but most passengers think what happens there is just a part of air transportation. Passengers for the most part are not aware that the airline on which they are riding is not the owner and operator of the airports used. They don't know where airline service stops and airport service begins. But to the user of his own plane, either privately or company owned, and to the passenger in a non-scheduled charter plane it is a very different matter. While there are some 200 airports used by the airlines there are around 3,000 used by the other types of airport users—the private and charter fliers.

Adequate airport service is even more important to the private flier and charter operator than it is to the airline passenger. Here, again, the first and most important airport service is to get the planes in and out safely. After this, certain very personal demands for service must be met or the airport fails this group of customers — the most important that an airport can have in many cases.

If we are to have mass private flying we must improve conditions at the airports used by this group. As such fliers gain experience they are no longer satisfied by taking local flights and practicing landings and take-offs. When they have time they want to go somewhere. After all what did they learn to fly for? But here the private flier is today faced with: (1) Lack of airports open for their use, (2) inadequate service at those that are available. Too often the non-scheduled flier is not allowed to use the airports serving the airlines and where service facilities are developed to a greater degree.

Right now airports open to private and to many charter operators are inadequate—are not deserving of the term service institutions. Frequently, transient fliers find no hangar space available and if there is space it is usually in a large outmoded structure so that when they go to get their planes perhaps early in the morning to continue a trip, they find six or more other planes that have to be moved to get one out. Transient fliers also find costs for storage and minor services high. Too many airports have no repair facilities at all or poorly trained and incompetent mechanics. No eating facilities, not even the most humble lunch counter, are available at the smaller or medium-sized fields, and on a trip, unless one carries his own lunch, a landing must be made at the nearest airport to a town, a taxi or other conveyance taken into town and back—all for a meal.

Many of the smaller airports are not even able to perform their primary service — to get planes safely in and out. Runway markings are frequently conspicuous by their absence and at other places markings are most unsatisfactory. Many of the smaller airports have obstructions which are disconcerting, to say the least, to the transient flier unfamiliar with local conditions. There may be high trees, rock piles on the field, livestock allowed to wander at will and other assorted hazards. Many an airport on which the private and other transient flier finds himself has no central administration building or if there is an office not even a sign indicates that fact. There are sometimes no markings even to indicate the town the flier is landing at. These are actual physical lacks from a service standpoint.

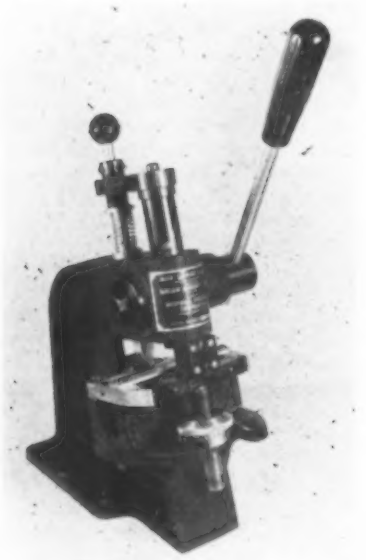
But there is another and perhaps just as important an angle to the problem. This is psychological. We must clean up the smaller airports. Matters needing to be cleaned up are not so noticeable around the larger airports but they are around the smaller. Untrained personnel handling the public at many fields operated by fixed-base operators; use of obscene language in the hearing of customers; unnecessary familiarity and insolence often drive the prospective flier away; often makes the transient resolve never to stop there again. At many so-called airports the "lounge," waiting room, or what have you is too often occupied by the local loafers who frequently pass audible remarks on the appearance of anyone passing by, particularly if a female. Poker games, drinking, and a certain type of story telling seem to occupy most of the time of these airport frequenters. The appearance of such groups, their conduct, and the general pool-hall atmosphere drives many a prospective flier away. To put it quite frankly, too many of the smaller airports are not places where one wants to take one's family, friends, or associates. They are not places where one would want one's daughter or wife to go unescorted. Why don't more women fly? One answer is that they can't be sure what kind of a place they may land at.

When one learns to fly it is a proud moment. One wants to show off to some degree; one wants family and friends to share in the experience, or at least observe the newly acquired skill in use. Here another service lack of many a small airport becomes apparent. The enthusiast who has learned to fly has put up with a lot; he has pushed his car over poor roads to reach the field; he has parked where he could in a muddy or deeply rutted spot; he has put up with a bench or a rickety chair in the so-called "administration" building or lounge room, or he has roosted on part of a fence as a place to sit and watch flying operations. He has put up with filthy toilet facilities—one toilet for everybody on the field, loafers, men, women, children, visitors, fliers —anyone who happens to stop in. He brings his family and friends out to such surroundings — people not as enthusiastic about flying as he is—and the result is what one might expect. These visitors get the impression that private flying is distinctly a small-time business, and they naturally become disgusted. Many a prospect is thus lost. If every fixed-base operator could only realize how important casual visitors, spectators, friends of those using his facilities and even passersby are to his business and to its future, he would understand why facilities for visitors' comfort, at this time of aviation development in particular, are the most important items on his field. To develop a flying public and an air-minded public, takes not only service to users, publicity, advertising, and salesmanship, but it must impress people with the desirability of spending free time at the airport. Convince everyone that an airport is an integral part of any community and that aviation enterprise is a **business.** The first step is to clean house. ★ ★ ★

AIRPORT EQUIPMENT

Spark Plug Gap Setter Now Available

A spark plug gap setting machine named for the Inventor, L. M. Oden, has been announced by the Durham Aircraft Service, Inc., as being available. The new machine was designed



to set two gaps at once on Aero, BG, Bendix and Champion spark plugs, and is said to set gaps on thousands of plugs with minimum maintenance. Feeler gauges require changing due to wear after a thousand plugs have been set, the company said, but is the only maintenance necessary on the machine. The Oden gapping machine can be operated by inexperienced help with a little instruction, according to Durham officials.

Brightness Selector for Runway Lights

So that the operator in the control tower can press a button and have proper light intensity on the desired runway, Westinghouse has perfected new contact light selector equipment for airports. Making the lights visible but not so bright as to blind the pilot, controls for the lamps provide five degrees of light intensity: 100, 30, 10, 3 and 1 per cent of full brightness. The contact light selector equipment for four runways is in the constant-current transformer and a single selector cabinet, five feet by two feet and four feet high. The new selector cabinet is completely assembled and wired at the factory. The only installation necessary is for incoming, outgoing and control cable connections to be made, according to Westinghouse.

THOS. D. BROAD
ARCHITECT
For Dallas Air Terminal
Love Field
Burt Bldg. DALLAS R-4768

Sidewalk Success Forecasts Heated Runways for Snow and Ice Prevention

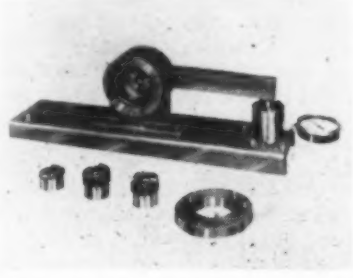
Radiant heating, perfected by Sarco Manufacturing Corporation for walks and driveways, may soon be applicable to the runways and landing strips at airports, according to T. Napier Adlam, vice president and general manager of the corporation. Wrought iron heating coils with hot water circulated through the one and one-fourth-inch pipes placed under walks and drives will free them from ice and snow that might hamper walking or driving. This same principle may also be applied to airports. The immediate melting of the snow not only would expedite the landing and taking off of planes, but, because many landing strips are black, the actual landing of the planes would be safer because of the visible contrast between the dark strip of the runway and the snow-covered ground beside it.

Mobile Airport Light for Many Uses

A twenty-four-inch mobile light unit combining many functions, such as an airport beacon, rotating or non-rotating, a searchlight, floodlight, temporary lighthouse or a signaling light has been revealed by Westinghouse. The new light unit can be disassembled and reassembled by the fingers, is able to be carried and is said to be ready for use under adverse conditions in a few minutes. The light can show red, green, yellow, or white by the use of snap-on lenses. Interesting feature is a spare lamp which is fixed in position so if one burns out the spare automatically moves into position and continues to function.

Compact Tester for Aircraft Starters

A new aircraft engine starter tester has been announced by the Airplane Manufacturing and Supply Corp. It can be bolted to a work bench for



testing clutch settings on starters used with engines up to 1,000 cubic inch displacement. The unit consists of a one-piece casting, mounted on a seven-inch steel channel. Furnished as standard equipment is a five-inch diameter mounting plate and one three-tooth starter jaw with torque arm and piston and assembly.

EQUIPMENT SERVICE

Readers desiring full details concerning Airport Equipment and Airport Literature are invited to address postcard requests to
MODERN AIRPORTS
P. O. Box 750, Dallas 1, Texas

Shell Oil Publishes Booklet on Airports

In a booklet, "The Airport — Its Importance to Your Community," published by the Shell Oil Company, Dr. R. T. Goodwin, manager of Shell's aviation department, has predicted "planes and fliers will multiply faster than autos and drivers did in the early days of the horseless buggy." The booklet discusses separate landing areas, postwar uses, problems, construction of airports, and the cost of planes.

Esso Booklet Tells How to Store and Serve Aviation Gas with Care

Handling and storage of aviation gasoline is not difficult if special precautions are taken, according to a booklet published by Esso Aviation Gasoline. Other than precautions which have been taken in preliminary handling, additional care is essential when gasoline is being delivered to airplane tanks. Contamination consisting of water, rust, dirt or particles of disintegrating cleaning cloths, pump-packing materials, gaskets or synthetic rubber hoses can be avoided by means of proper filters, which should be cleaned daily.

To avoid fire hazard, planes should be gassed outside the hangar. Regardless of the method of handling tank trucks, refueling pits, drums or cans, precautions are necessary to guard against static electric sparks, entry of water or other foreign matter such as rain, snow or dirt blowing in from the airport, the booklet warns. Gasoline delivery hose must be metal-lined, or otherwise bonded between the nozzle and the fittings on the other end. In addition, one end of a flexible bonding wire should be attached permanently to the discharge nozzle. Before removing the filler cap to refuel an airplane, the free end of this bonding wire should be attached by means of a clip to an uninsulated metallic part of the airplane structure not more than four feet from the tank filler neck, but not adjacent to it. This bonding wire should not be disconnected until the filler cap has been replaced.

A DISTINGUISHED NEW NAME FOR A DISTINGUISHED OLD SCHOOL

CAL-AERO TECHNICAL INSTITUTE

MAJOR C. C. MOSELEY — PRES. SINCE 1929

FORMERLY CURTISS-WRIGHT TECHNICAL INSTITUTE

A SYMBOL OF THE HIGHEST STANDARDS IN AVIATION TRAINING SINCE 1929 — THE BEST TO BE HAD IN SPECIALIZED TRAINING IN AERONAUTICAL ENGINEERING AND MASTER AVIATION MECHANICS

AVIATION CAREER

Created during the war, the name "Cal-Aero" has become world famous, in the field of aviation training, as one of the original civil schools that proved so successful in the Civil-Army program of training pilots for the Army Air Forces. At the same time this school now known as Cal-Aero Technical Institute, was the first school and for a long time the only school in the West to be selected by the Army Air Forces to train ground crew members. With these schools, both under the personal supervision of Major C. C. Moseley, it was but natural in planning for the post-war period, that they should come under the distinguished name of "Cal-Aero."

Honored by citations for distinguished service in training men for the Army Air Forces with an unparallelled record of safety and efficiency, these schools have trained more than 20,000 pilots and 7,500 crew members. Among them more than 1,200 have been decorated for valor above and beyond the call of duty. At the same time this school continued to train thousands of civilians as engineers and master aviation mechanics for the production front.

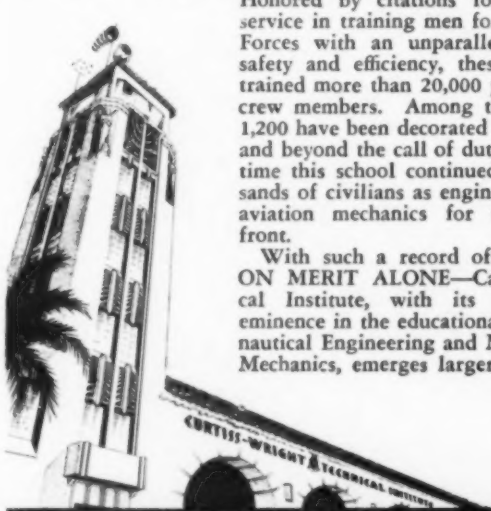
With such a record of achievement—ON MERIT ALONE—Cal-Aero Technical Institute, with its place of pre-eminence in the educational field of Aeronautical Engineering and Master Aviation Mechanics, emerges larger and finer than ever before on its own Class IV airport, Grand Central Air Terminal, ("suitable for the largest aircraft now in use or planned for the immediate future.")

Other than in name, there is no change in the school—same management—same location—same personnel—same fine specialized technical training, incorporating all of the latest developments and methods to insure your future career in Aviation. Flight Training is restricted to Army Air Force cadets for the duration.

Plan NOW for your FUTURE CAREER in the expanding field of Aviation. America is going to fly for pleasure, for business, for commerce. With more airplanes, airlines, airports and facilities planned for the post-war period, there will be more and more opportunity for the career trained man in Aviation,—the man with a thorough foundation of technical training.

Since 1929 this school now known as CAL-AERO TECHNICAL INSTITUTE, has continued to graduate men who enter and fill positions of trust and responsibility in all phases of the Aviation Industry. What this school has done for them it can do for you. Today, as in the past, we are training far-sighted, conscientious young men from many states and foreign countries, despite the difficulties of wartime travel. Among them are a great many service men, anxious to fit themselves for an outstanding place in the Golden Age of Aviation, who have enrolled upon discharge.

Write or mail coupon TODAY for full information about the possibilities of a post-war Aviation Career.



THIS TOWER OVERLOOKS AVIATION'S MOST DISTINGUISHED SCHOOL OF AERONAUTICS

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FORMERLY CURTISS-WRIGHT TECHNICAL INSTITUTE

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WITHOUT COST OR OBLIGATION SEND ME FULL INFORMATION AND CATALOG ON THE COURSE CHECKED BELOW

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- ☐ AIRCRAFT BLUE PRINT READING COURSE. HOME STUDY

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CALIFORNIA CONFERENCE SPEAKERS last month in Hollywood included Hall Hibbard, Lockheed Aircraft Corporation vice president and chief engineer (left), who forecast greatly shortened runways ten years from now; John R. West, West-Marquis, Inc., president (center), who opposed state gas taxes and urged a U. S. levy dedicated to aviation purposes, and Glen B. Eastburn, Los Angeles Chamber of Commerce, elected permanent chairman.

California Plans State Aero Commission After Conference Speakers Cite Need of Local Development

Action in January for the establishment of a state aviation commission in California was expected following the California Aviation Conference, held December 12-13 in Hollywood, at which the need of state development was emphasized. The Conference was sponsored by the Los Angeles Chamber of Commerce.

William H. Rosenthal, chairman of the California State Assembly Aviation Interim Committee, told the Conference he will propose establishment of a state commission composed of five members appointed from the industry and headed by salaried director appointed by the commission. Its major functions, he said, will include airport zoning, fostering of airport construction, licensing of pilots and registration of aircraft, and establishment and equipment of aviation classes in public schools.

Several other speakers at the Conference called for state action in California. Robert F. Craig, head of the University of Southern California's Department of Commercial Aviation, said a state commission is needed to co-ordinate airport planning.

New Planes to Shorten Runways

Developments such as castered landing gear, reversible-pitch propellers, jet-assisted take-off, helicopters and aerodynamic refinements such as boundary layer control will greatly reduce future airport requirements, Hall L. Hibbard, Lockheed Aircraft Corporation vice president and chief engineer, told the Conference.

The helicopter will ultimately eliminate the need for landing strips and in about ten years will be the plane most used by the private flier and feeder lines, he said. For transport aircraft, he recommended runway dimension as follows: Feeder, between 3,500 and 4,500 feet; long-range aircraft, between 5,000 and 6,000 feet.

John R. West, Los Angeles advertising executive and national NAA councilor for California, deplored state aviation gas taxes in general as a "popular form of stealing money from people in aviation," and recommended a uniform Federal aviation gasoline tax entirely allocated for landing facilities and airways, with the states refraining from taxing aviation gas but establishing uniform registration fees, entirely to be allocated for aeronautical development.

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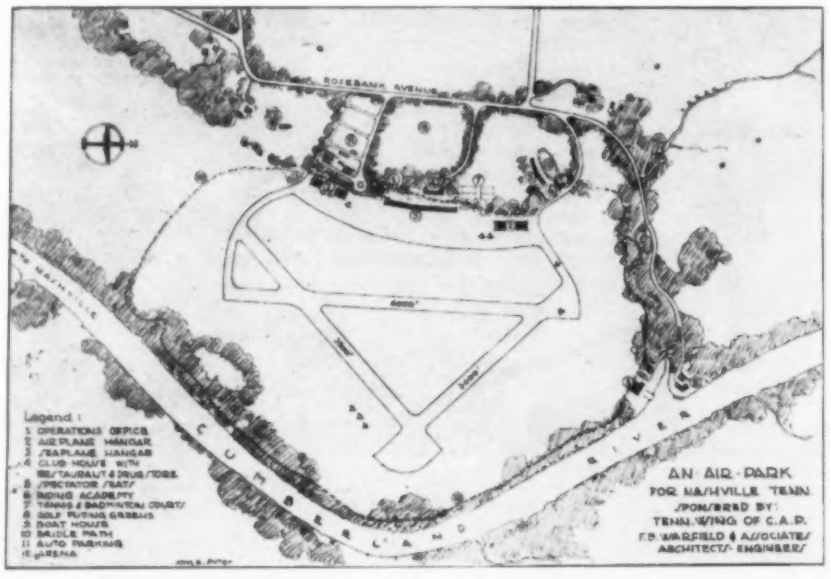

MODEL TENNESSEE AIRPARK costing less than $150,000 is being urged for cities in the Volunteer state by the Civil Air Patrol and Tennessee Bureau of Aeronautics. Architect's drawing shows model designed for Nashville. It would boast two sod runways, operations office, hangar, clubhouse with restaurant and drug store, spectators' seats, riding academy with bridle paths circling the field, tennis and badminton courts, golf putting greens, and arena. Cumberland river would offer floatplane basing. —(Tennessee Wing, CAP, Photo.)

"Cut"—
It's a perfect approach to the carrier deck, so the signalman waves his paddles, telling the pilot to "cut throttle" on the engine. Now, the landing gear must complete the smooth landing—a job which Aerols efficiently perform with their reliable, shock-absorbing action.
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Speed Final Victory! Buy MORE War Bonds and Stamps
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Airport Execs Training Veteran in "Guinea Pig" Management Program

RECOGNIZING the need for professionally trained airport managers, the American Association of Airport Executives at their annual meeting in Chicago last July took action to foster the development of airport management courses in universities. One such course was already under way at the University of Texas, directed by Dr. John H. Frederick.

Many returned service men and others are attracted to the airport management field and Pat Moore, secretary-treasurer of the American Association of Airport Executives, was flooded with inquiries of "Where can I get some airport management training?" He, therefore, decided that he would select one man from the many who inquired from him and put him through the paces to see what could be done with an enthusiastic novice in this field.

Moore's selection was Leigh Fisher, discharged from the Army Air Forces early in 1943 and employed by Douglas Aircraft in its engineering department since that time. It was suggested that Fisher visit Austin and plan a year's work with Dr. Frederick. This was done and he is now hard at it.

Before he gets through he will take the following courses:

Commercial Air Transportation, general course
Airline Administration and Practice
Problems in Airport Administration
Field Work in Airport Management (at the Austin Municipal Airport)
Accounting
Business Law
Property Insurance and Fidelity Bonds
Marketing and Advertising
Salesmanship

Leigh Fisher

In addition he is reading broadly in the field of air transportation and working on a research problem in airport management.

Upon completion of the formal work at the University next July, Fisher will do considerable field work at various airports in the United States, arranged for through Moore's co-operation. He will then be ready to go to work with some airport manager. ★ ★ ★

Airport Construction

Construction awards by the Chief of Army Engineers announced last month by the War Department included:

MADERA, CALIF.—L. H. Hansen & Sons, Fresno, Calif., to construct prefabricated buildings, water supply system and utilities at Madera Airfield at a cost of $11,499.00.

HAMILTON FIELD, CALIF. — William D. Rapp, Santa Rosa, Calif., to construct hangar foundations at Hamilton Field. The cost is $36,319.

GEORGETOWN, TEXAS — A. L. Bucy, Brownwood, Texas, for clearing, grubbing and fencing at Georgetown Municipal Airport at a cost of $23,912.60.

HAMILTON FIELD, CALIF. — H. H. Larsen Co., San Francisco, Calif., to construct air freight terminal for Air Transport Command at Hamilton Field. The cost is $102,723.00.

ATLANTA, GA.—H. E. Wolfe Construction Co., Inc., St. Augustine, Fla., to grade and drain Atlanta Municipal Airport at an approximate cost of $67,321.35.

Rep. Lea to Offer New Airport Plan

Although the Civil Aeronautics Administration has submitted its billion-dollar National Airport Plan to Congress, and Rep. Jennings Randolph of West Virginia has had his HR 5024, which would appropriate the CAA's funds for airports on a 50-50 U. S.-State basis, under consideration for some time, Congressman Clarence F. Lea of California was about ready last month to offer Congress an airport project of his own. Details of the Lea proposal were not available, but he was believed to be figuring in terms of less than a billion dollars.

The Airport Observer

FLYING CLUBS are a headache to most base operators and are discouraged by many of them. Is this the right attitude?

In one of the largest cities in Texas, all of the private operators, except one, agreed to bar flying clubs from their fields. The Texas Women Flyers, consisting of more than 100 members, wished to operate a flying club. The municipal airport assesses a field charge for all operators and the club did not think it could afford to pay this charge. All except one operator denied them the use of privately owned airports. This lone operator permits the club to use his field without charge. He sells gas and oil and repair service to the club. Every member is a potential plane owner and this operator will have an excellent opportunity to make the sales.

Then there is another angle to consider. People are gregarious. Activity at an airport is the best advertisement and is an attraction to new customers. I believe this operator is advancing civil aviation in that city and that in the long run, he will benefit more than the operators that closed their fields to flying clubs.

Pay telephones. I dropped into a privately owned field the other day and asked about transportation to town. I was told that a taxi was the only means of transportation. No one offered to call a cab for me, so I reached across the rail, picked up the telephone and was stopped by the airport manager. He said that there was a pay telephone on the other side of the room. Naturally, I resented his action.

Pay telephones have their place on a small airport, but a customer should not be required to pay for local calls. If a free phone is also available, it should be kept out of sight, under the counter or in a drawer. If a customer should see the free phone and ask to use it, common courtesy would demand that the customer be granted permission to do so. The old saying, "Penny wise and pound foolish" applies in this case and a good customer can easily be lost by haggling over a 5c phone call.

Airport Maintenance. The finest example of airport maintenance by a municipality that has come to the attention of the Observer is the Alvin Callender Airport at New Orleans. This is a new field and looks like a golf course from the air and from the ground. Congratulations, Doug Langstaff.

Temporary Administration Buildings. In these times of priorities, and shortages of men and materials, cities are faced with a real problem of constructing adequate facilities for the airlines and related activities. San Antonio and Laredo, Texas, are ex-

cellent examples of what can still be accomplished.

At San Antonio, a hangar lean-to houses three airline offices and a cafe. The interior decorations are such that once you are inside, you forget that you are in a hangar lean-to.

At Laredo, a simple frame building was constructed and the interior is a fine example of inexpensive, yet attractive, decorations. Plenty of comfortable chairs are available and a generous supply of magazines is available on a table, for those who are waiting. A professional interior decorator transformed this plain waiting room into one that leaves with you a warm feeling for Laredo as you continue your journey.

Loop Landing Strip, Huge Terminal Among Chicago's New Plans

The downtown landing strip idea gained another convert in December when Mayor Edward Kelly of Chicago announced plans for a landing facility to be established on one of five sites near the Loop. The runway would be 3,700 feet long, and facilities for handling 500 landings a day would include hangar space for that number as well as a terminal building.

Mayor Kelly also proposed a new super terminal building for Chicago's main airport. Costs were not stated, but the facility would be adequate for 25,000 airline passengers per day.

Georgia Report Printed

Proceedings of the recent Georgia Aviation Clinic are being printed and will soon be available at $1.50 per copy from the Macon Chamber of Commerce, P. O. Box 288, Macon, Ga.

Airline Construction of Own Terminals and Hangars Proposed; United Plans $12,000,000 Building Program

United Air Lines will build its own terminal buildings at the airports it serves, according to an announcement by W. A. Patterson, president, in a recent address. Twelve million dollars is the estimated cost of putting such a plan into effect on United's system.

Under this plan each airline would build its own hangars and would jointly finance terminal buildings with other airlines serving a town.

Patterson stated, "If the Federal, state or municipal government has provided the airport land, surfacing of runways and navigation facilities, it has fulfilled its obligation to airline transportation, and the airline should build the terminal building and hangars."

20,000 Air Parks Needed, Mara Says

An adequate system of "air roads" for America will require at least 20,000 "air parks," small landing fields adjacent to highways, according to William A. Mara, staff executive of Bendix Aviation Corporation in an address before the Cleveland forum of the National Aeronautic Association. Mara explained that the "air parks" are essentially, a level, grassy piece of land, about 200 feet wide and up to 2,000 feet in length, not necessarily being surfaced, but well drained. Better designs and new systems of flight and navigation instruments and more efficient fuel equipment will enhance the value of postwar personal airplanes and make them easier, safer and more economical to fly, Mara predicted.

Air Marking Campaign Lauded in New England

The New England Council's Aviation Committee is sponsoring a move to have a network of air markings throughout New England to enable airplane pilots to recognize immediately the territory below them. J. Burleigh Cheney, chairman of the Council's Aviation Committee and president of Skyway Corporation, has urged communities to take up the problem of air marking immediately and to plan for the most modern kind of identification and direction. The Council launched its plan for promoting uniform air markings in the region following the recent lifting of military restrictions against these identifications.

CAA May Change Plans So Cities Can Get Airport Funds Direct

Municipal opposition to CAA plans for apportioning Federal airport funds direct to the states has led the CAA to compromise its formula, proposing direct allotment to municipalities for large airport projects, according to Washington reports. However, the bulk of the airport program would still be handled through state agencies, as large municipal projects proposed by the National Airport Plan involve only a fraction of the billion-dollar program.

Tennessee Creates Aeronautics Division in State Education Department to Expand Aviation in Classrooms

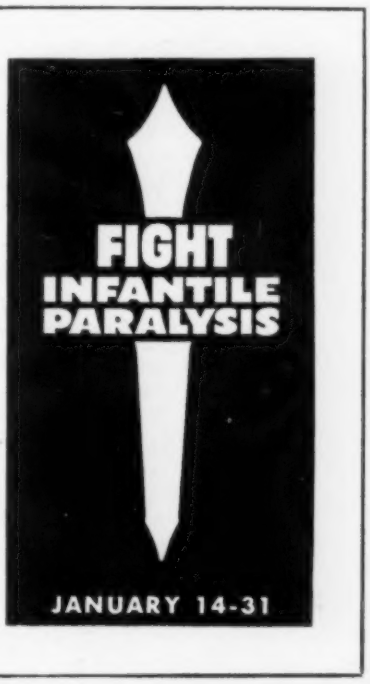
Tennessee has established a division of aeronautics education in its state department of education with Charles H. Gilmore as director. Gilmore was formerly co-ordinator of Civilian Pilot Training of the Naval Cadet program, and director of the program for training aviation teachers at Austin Peay State College. Kenneth Newland, of the Aviation Education service of the Civil Aeronautics Administration, is now serving as consultant for the division.

The objectives of the new division are to assist colleges in training aviation teachers; to assist high schools and colleges in securing equipment and introductional materials; to arrange with the CAA for teachers' and supervisors' institutes at selected Tennessee airports, to arrange for the visit of high school and college classes to five major airports in the state; to develop a plan for extending aviation to more high schools; to serve as a clearing house for ideas in aviation education; and to evaluate available instructional aids, including readings, visual aids and laboratory equipment.

Five colleges in the state own their airports, including Fiske University, privately-endowed negro university. Ten other colleges have airports under their control through lease.

Nine hundred high school students in fifty schools throughout Tennessee are enrolled in the one-unit course in aeronautics.

Aeronautics teachers have organized the State Association of Aeronautics with Eugene Bence, Whitehaven High School as President; C. H. Gilmore, State Director of the Aviation Education Division of the Department of Education as Executive Secretary, and Vice Presidents from each of the three sections of the state: Isma Chandler from East Tennessee, Jacob Shapiro from Middle Tennessee and J. P. Bradberry from West Tennessee.



Current Airport Literature

Compiled and Edited
By WILLARD KELSO DENNIS
Librarian, Parks Air College

(EDITOR'S NOTE: This bibliography appears every month for the reliable guidance of MODERN AIRPORTS' readers. Inquiries regarding Mr. Dennis' complete aeronautical bibliography will be forwarded to him.)

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AIRPARKS
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Airfield building will pace air progress, by R. S. Damon. *Airports*. 6:20, 43. Nov. 1944.
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Sky Ranch for private fliers, by Preston Doerfler. *Southern Flight, Modern Airports*. 22:55, 67. Dec. 1944.

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Missouri's model airpark at Eldon. *Aviation News*. 2:28. Dec. 11, 1944.
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Home base for the University of Illinois' ambitious program of aviation education. *National Aeronautics*. 22:55. Nov. 1944.
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Milwaukee airport. *Aviation News*. 2:21. Dec. 4, 1944.

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Building the small airport, by R. C. Blatt. *Aviation Maintenance*. 3:58-61, 140. Dec. 1944.
Detroit port suit. *Aviation News*. 2:46. Nov. 20, 1944.

AIRPORTS—MAINTENANCE AND REPAIR
Maintenance, by Kenneth Coryell. *Aviation Maintenance*. 3:51, 174. Dec. 1944.
Maintenance of unpaved areas, by D. E. Griffiths. *Southern Flight, Modern Airports*. 22:58-60, 65. Dec. 1944.

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The airport and airline passengers, by J. H. Frederick. *Southern Flight, Modern Airports*. 22:54, 67. Dec. 1944.
Airport restaurateur. *Air Transport*. 2:119-120, 123. Nov. 1944.
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Personal planes, by R. C. Oertel. *Air Tech*. 5:28, 72. Dec. 1944.
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The wrong kind of airport, by Hart Bowman. *Southern Flight, Modern Airports*. 22:46. Dec. 1944.

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Turf can pave the way. *Airports*. 6:22-23. Nov. 1944.

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Mail and cargo handling on Martin Mars sped up by Navy's new-type dock. *Air Transportation*. 5:12-13. Nov. 1944.
Martin flying boat terminals. *American Aviation*. 8:50. Nov. 15, 1944.
Sealand air base and sky dock. *Commercial Aviation*. 6:86, 88. Nov. 1944.

CAMOUFLAGE, AIRPORT
Camouflage, by M. Goodwin. *Aeroplane*. 67:387-388. Oct. 6, 1944.

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The war is still on . . . and will be for some time to come.

But right now—before the war ends—every man in America has an unprecedented opportunity to make terms with himself for his own peace . . . his peace of mind.

For *now,* as never before, a man should look at his wife and family and say, "What can I offer them for the future?"

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Now, as never before, a man should look at tomorrow and say, "How can I best prepare for some unforeseen emergency which might affect my family?"

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That opportunity is War Bonds. No doubt you are buying War Bonds through the Payroll Saving Plan. Arrange to buy *more* War Bonds. All you can afford. *More* than you thought you could afford.

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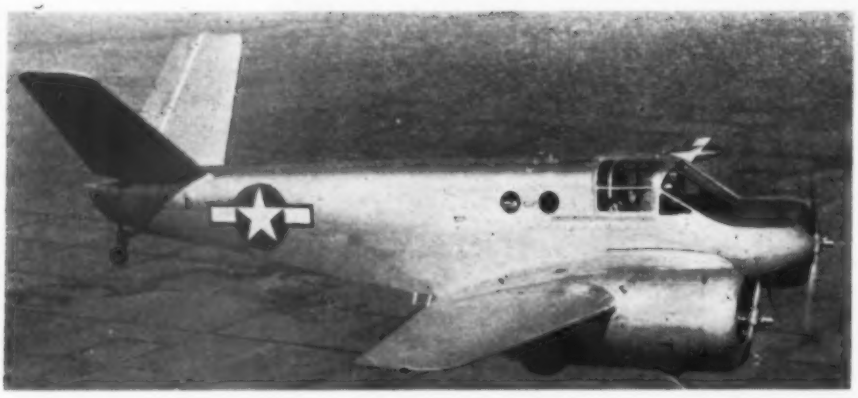
This is an official U. S. Treasury advertisement—prepared under auspices of Treasury Department and War Advertising Council.



WITHOUT HORIZONTAL OR VERTICAL TAIL SURFACES, this experimental Beechcraft AT-10 has a butterfly tail which the firm described as providing "excellent" control and stability at all speeds. Only trick is to let the movable surfaces know when to act as rudders and when to serve as elevators.

—(Beech Aircraft Photo.)

NATA CONVENTION

(Continued from page 31)

get out of aviation. The most popular pastimes are cussing the CAA, the CAB and the insurance companies. But the days for using these venerable institutions as whipping boys are numbered. Non-scheduled aviation will have to find some new substitutes because the old arguments and habitual complaints just won't hold water any more. The CAA and CAB are showing willingness to co-operate at every turn while the insurance people have demonstrated their ability to prove that they are just as anxious to slice insurance rates as the fliers are.

In the matter of simplifying regulations, which came up for heated discussion, even the CAA and CAB have come to agree with Tom Beck, who made the most acceptable speech of the entire convention, when he said, "If a guy is going to have to have ten months of navigation, a year and a half of meteorology, and six months of Morse code, and if he has to be able to pick out cones of silence and such things before he is allowed off the ground, he is not going to take off. He is going to give up in despair. This thing has to be as simple as an automobile. But we had the same thing back in the beginning of automobiles. We had to get the customer a third-class stationary engineer's license. . . . Everything has to be simplified. If you men and women don't do it, I don't know who will. I say that the future of aviation, the future of private flying, and therefore the reemployment in the aviation industry, lies in your hands and in the work you do, not only at these conventions, but more particularly when you get home to your airfields and airports, to your plants and factories."

Insurance

In the panel discussion of insurance and finance problems, old line aviation insurance representatives did a creditable job of defending their rate structures and general policies. It was pointed out that there are about fifty companies selling aviation insurance and that competition is keen. One insurance spokesman asked if the manufacturer who charges $117 for an exhaust stack or the operator who charges $2.50 an hour for labor can throw stones at the insurance people. In his opinion no branch of aviation is getting rich and high prices are due to lack of volume.

General Topics

Major General Bennett E. Meyers, Deputy Director, Air Technical Service Command, paid glowing tribute to the contributions of civil aviation to the war effort and asked that every encouragement be given commercial and civilian aviation so that the Air Forces can continue to depend on it not only throughout the war but in the postwar world. Grover Loening, chief aircraft consultant for the WPB, opinioned that there are countless developments in a prototype way that can be made now by the aircraft industry in aiming at a peacetime product that would nevertheless have a war value. He mentioned helicopters, radar, jet, glider trains, cheaper-to-run commercial transports, small airborne aircraft, Loening also pointed out that the two outstanding needs for successful private flying promotion were crosswind landing gear and the development of a muffler to get away from the airplane's noise nuisance. He believes they also have a military usefulness.

In their annual reports to the NATA delegates, President Roscoe Turner and Executive Director John Wilson sketched the accomplishments of the organization during 1944 and outlined the major projects for 1945. Top among objectives will be a campaign for recognition of non-scheduled aviation in new Federal aviation legislation on the same basis and equality with consideration given scheduled air transport. It was pointed out that the Civil Aeronautics Board, for example, spends most of its time on scheduled aviation and practically ignores non-scheduled problems. Both Federal and state aviation legislation will be watched closely and NATA will continue to work in co-operation with all other aviation groups and organizations on legislative matters. A vigorous membership campaign will be undertaken early in the year and an attempt will be made to establish a Washington office. A public relations, advertising, sales and service aid department might be created. The Association plans to publish a directory of NATA operators, facilities, and a listing of repair and overhaul establishments under an Approved Service System for use by the flying public. Better service to the consumer, closer liaison with the manufacturers, support of a national airport program and reduction and simplification of Civil Air Regulations are also objectives for 1945.

One night was given over to entertainment, providing some welcome relaxation and comic relief. Major Zack Mosley, CAP, creator of the "Smilin' Jack" cartoon strip, put on a Sadpan "Pantest" which was won hands down by A. A. (Mountain Goat) Bennett of Pocatello, Idaho.

Another extra-curricular activity was a mass flight of eleven light airplanes on and off a temporary "airpark" established on the site of the St. Louis World's Fair in Forest Park. The one-way landing strip was 1,580 feet long and 300 feet wide. A tricky cross-wind was blowing during the demonstration, and tall trees hemmed in the field. However, none of the airplanes used more than a quarter length of the available runway.

When the final curtain dropped on the convention sessions, Johnny Wilson and Convention Chairman "Pop" Mooney swore never again to set up booths in the meeting rooms. On the strength of their promise we pledge to come back next year. Nevertheless the growing, energetic, rugged individualistic forces of independent aviation turned out for the convention en masse, argued their principal problems, diagnosed their most painful ailments and re-elected the irrepressible Roscoe Turner president for 1945. Roscoe promised a hard-riding, hard-fighting administration dedicated to the removal of all obstacles blocking the road to better days for non-scheduled aviation. We believe he means it.

★ ★ ★

The Flight School for YOUNG WOMEN

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It is offered to young women who want to add Air-wisdom to other accomplishments, who want to enlarge their horizons and to enjoy "the broad freedom of personal flight." It is offered to the young woman who wants, in the fullest sense, to play her part in modern living by being not an observer only, but actually a participant in the Air Age.

The Alabama Institute of Aeronautics, with Oliver L. Parks and Walter P. Thorpe as operating principals, has the advantage of over **17 years' experience in providing aeronautical education and training.** This experience includes preparing hundreds of young men, civilians, to accept and discharge creditably the responsibilities of the scheduled airline pilot. In addition, it includes flight and ground school training to many thousands of military personnel serving in the Air Forces of the United States, France, and England.

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YOU ASKED FOR IT

Newly revised Parts 43 and 60 of the Civil Air Regulations, scheduled for adoption soon, will greatly simplify and modernize the Federal rules for flying.

LAST month we published in these pages proposed revisions for Part 20 (pilot certificates) of the Civil Air Regulations. Herewith are published newly-recommended revisions of Parts 43 (non-carrier operations) and 60 (air traffic). The adoption of these parts in their final form, expected to materialize "early in 1945," according to CAB and CAA officials, will represent the first phase of the CAB's announced project of modernizing Civil Air Regulations.

The complete proposed revisions of Parts 43 and 60 follow:

PART 43—NON-AIR CARRIER OPERATION RULES

43.00 *Scope.* The following rules govern the operation of non-air carrier civil aircraft in the United States. Aircraft used exclusively in the governmental service, including military aircraft, are not considered civil aircraft.

43.0 GENERAL

43.1 AIRCRAFT CERTIFICATION AND IDENTIFICATION

43.10 *Certificates and identification marks.* Aircraft, except foreign aircraft authorized by the Administrator to be flown in the United States, must not be operated unless the following requirements are met:

43.100 *Registration certificate.* A registration certificate issued to the owner of the aircraft must be displayed in the aircraft at all times. (For rules governing the registration and recordation of ownership of aircraft see Administrator's Regulations 501 and 503.)

43.101 *Airworthiness certificate.* An airworthiness certificate or special authorization, issued by the Administrator, approving its operation must be carried in the aircraft at all times during flight.

Note: As a general rule the manufacturer obtains the airworthiness certificate which thereafter remains with the aircraft. If no airworthiness certificate has been issued for the aircraft, or if it has expired, the owner must obtain this certificate.

43.1010 *Duration.* An airworthiness certificate shall remain in effect until its termination date is fixed by the Board or until it is lawfully suspended or revoked.

43.1011 *Transferability.* The airworthiness certificate and the attached currently effective aircraft operation record, upon transfer of ownership, must remain with the aircraft for which they were issued.

43.1012 *Surrender.* Upon the cancellation, suspension, or revocation of an airworthiness certificate the owner of the aircraft must, upon request, surrender such certificate to an authorized representative of the Administrator.

43.1013 *Operations record.* An operations record, which shall specify the operating limitations of a particular aircraft, shall be issued by the Administrator. The operations record must be attached to the airworthiness certificate. The aircraft must not be flown except within the limitations specified therein. Any modification to the aircraft which affects the limitations set forth in the operations record must be made under the supervision of an appropriately rated mechanic or other person authorized by the Administrator and such change must be noted in the operations record.

43.102 *Identification marks.* Aircraft identification marks must be displayed on aircraft in a manner prescribed by the Administrator. They are as follows:

(a) *NC.* An aircraft which has fully complied with the minimum airworthiness requirements specified in the Civil Air Regulations must display the Roman capitals letters NC followed by the registration number.

(b) *NR.* An aircraft which the Administrator has found to be safe for restricted operations must display the Roman capital letters NR followed by the registration number.

(c) *NX.* An aircraft which the Administrator has found to be safe for experimental operations must display the Roman capital letters NX followed by the registration number.

(d) *Other marks or symbols.* No other design, mark, or symbol which modifies or confuses the identification mark may be placed on aircraft, except with the approval of the Administrator.

43.1020 *Export aircraft.* An aircraft manufactured in the United States for delivery outside the United States or its possessions shall display such identification marks or insignia as are approved by the Administrator. Such aircraft may be operated only for the purpose of test and demonstration flights for a limited period of time or while in transit to the purchaser.

43.2 MAINTENANCE

43.20 *General.* An aircraft must not be flown unless it is in airworthy condition.

43.21 *Periodic inspection.* An aircraft must not be flown unless within each 100 hours of flight time or within the preceding twelve calendar months, whichever period comes first, it is given a periodic inspection as prescribed by the Administrator and is found to be airworthy by a certificated mechanic. At least one such inspection shall be made by a representative of the Administrator designated for such purpose within the twelve calendar months preceding the date of flight, and a copy of this report attached to the operations record.

43.22 *Aircraft and engine records.* The registered owner must keep accurate, current, permanent records of the total flight time of the aircraft and the running time of each engine. Such records must be kept in logbooks or other suitable systems readily available for transfer with the aircraft or individual engine and, upon request, must be presented to an authorized representative of the Administrator or Board. A mechanical device approved by the Administrator which records flight time may be used in lieu of logbooks.

42.23 *Rebuilt engine logbooks.* A new record without previous operating history may be used for an aircraft engine rebuilt by the manufacturer or any agency approved by the manufacturer for such work, provided such new record contains a signed statement by such manufacturer or agency giving the date the engine was rebuilt and such other information as the Administrator may require.

43.3 AIRCRAFT EQUIPMENT

43.30 *Required instruments and equipment.* Aircraft must not be flown unless the instruments and equipment listed below for the particular type of operation are in serviceable condition, except that aircraft may be flown under general flight rules (day) without pay passengers to the nearest point where repairs or replacement may be made, with any of the instruments and equipment inoperative. An aircraft carrying pay passengers under general flight rules (day) and any aircraft being flown under night or instrument conditions, with or without passengers, must land either at the nearest suitable landing area or at the next point of intended landing, whichever is the safer procedure, if any of the instruments or equipment listed below become unserviceable in flight.

43.300 *General flight rules (day).*

(a) *Without pay passengers:*

(1) an airspeed indicator,

(2) a tachometer for each engine,

(3) an oil pressure gauge for each engine where pressure system is employed,

(4) a liquid thermometer for each liquid-cooled engine,

(5) an oil thermometer for each air-cooled engine,

(6) a manifold pressure gauge, or equivalent, for each engine when operating limits are specified.

(b) *With pay passengers.* All items listed in paragraph (a) and

(1) an altimeter,

(2) a fuel quantity gauge indicating the amount of fuel in each tank,

(3) a magnetic compass, except for local flight,

(4) approved flotation gear for each occupant and a Very pistol or equivalent signal device, if the aircraft is operated for hire over water beyond power-off gliding distance from shore.

43.301 *General flight rules (night).*

(a) *Without pay passengers.* All items listed in § 43.300 and a set of certificated forward position lights in combination with a certificated tail light.

(b) *With pay passengers.* All items listed in §§ 43.300, 43.301 (a), and

(1) one electric landing light,

(2) a minimum of certificated landing flares specified as follows for operations beyond a three-mile radius from the center of the airport of take-off:

Maximum authorized weight of aircraft	*Flares*
2,000 lbs. or less	5 class-three or 3 class-two
above 2,000 lbs.	2 class-one or 3 class-two and 1 class-one

43.302 *Instrument flight rules (day).*

(a) All items in § 43.300, whether or not with pay passengers, and:

(1) a radio transmitter operating on 3,105 kilocycles to permit communication at a distance of at least 100 miles,

(2) a radio receiver capable of receiving radio range and weather broadcasts.

(3) a gyroscopic rate-of-turn indicator. (All air-driven gyroscopic instruments must derive their energy from a suction air pump driven either by an engine or an auxiliary power unit),

(4) a bank indicator,

(5) a rate-of-climb indicator,

(6) a sensitive altimeter adjustable for

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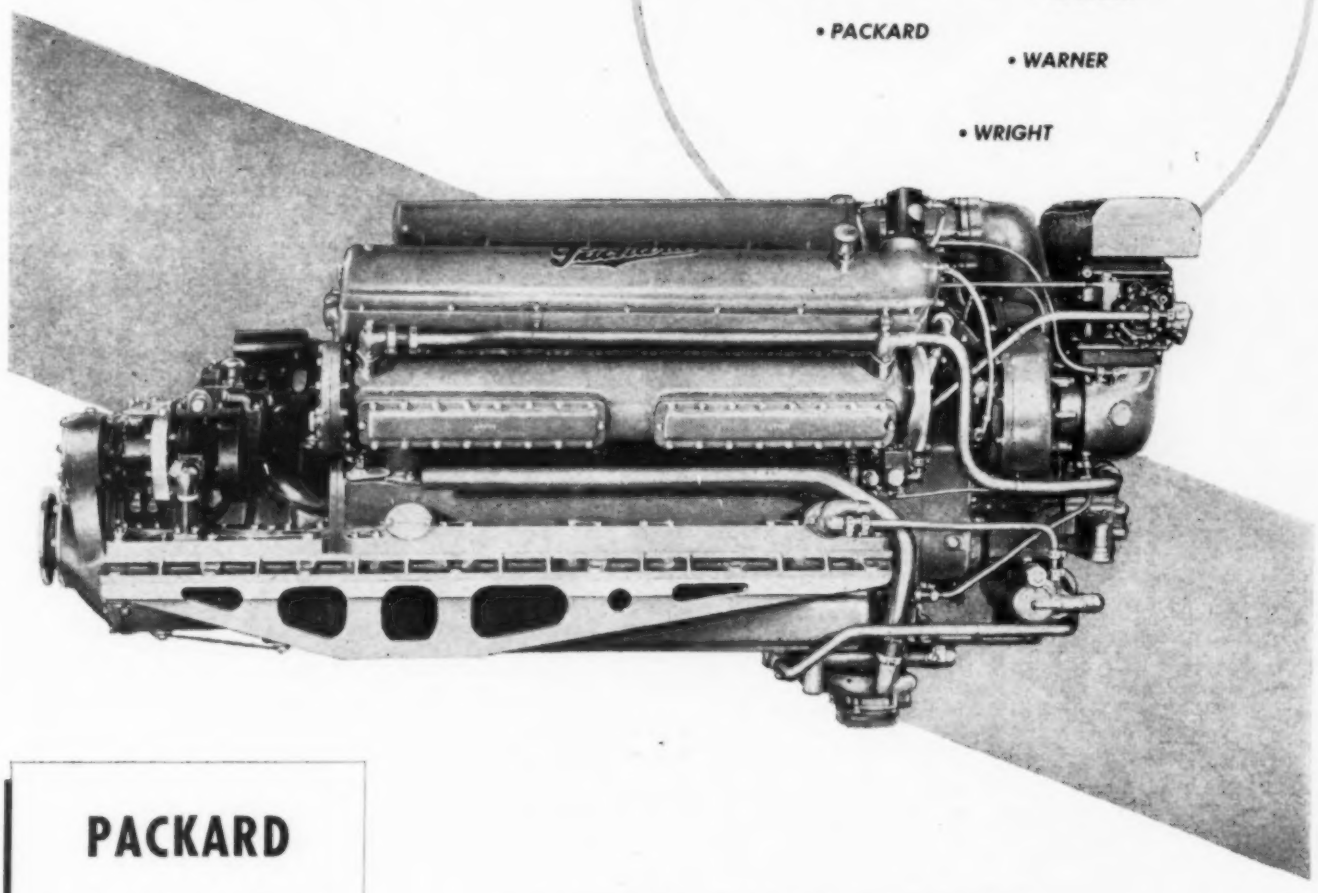

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change in barometric pressure and compensated for changes in temperature,

(7) a clock with a sweep-second hand, and

(8) a gyroscopic compass.

43.303 *Instrument flight rules (night).* All items in §§ 43.300, 43.301, and 43.302, whether or not with pay passengers.

43.4 OPERATING RULES (GENERAL)

43.400 *Definitions.*

(a) A *pilot* is a person holding a valid pilot certificate issued by the Administrator.

(b) To *pilot* means to be in command of the aircraft during take-off, in flight, or landing.

(c) *Passenger* is an occupant of the aircraft in flight other than a crew member.

(d) *Flight instructor* means a private or commercial pilot who possesses a valid flight instructor rating.

43.401 *Pilot certificate.* Any person piloting an aircraft in the United States must hold a valid pilot certificate issued by the Administrator or a foreign pilot certificate validated by the Administrator.

43.402 *Periodic physical examination.* A person shall not pilot an aircraft unless he has a medical certificate or other evidence satisfactory to the Administrator, showing that within the preceding twelve calendar months he has met the physical requirements for his present rating classification.

43.403 *Pilot logbooks.* A record of the flight time used to substantiate recent experience or qualification for certificates or ratings shall be kept in a bound logbook. Such record shall show:

(a) date of flight,

(b) type, make, and model of the aircraft flown, the airplane class and engine horsepower,

(c) aircraft identification mark,

(d) dual instruction endorsed by a rated instructor, solo, instrument, and night flying time, and

(e) duration of flight and the points between which such flight was made.

43.404 *Logging of flight time.*

(a) *Student pilot.* A student pilot may log as solo only that time during which he is the sole occupant of the aircraft in flight.

(b) *Pilots of private class or higher.* A pilot of private class or higher may log as solo that portion of any flight during which he is the sole manipulator of the controls of an aircraft for which he is rated or any flight during which he is the sole occupant of the aircraft. A flight instructor also may log as solo all that flight time during which he is serving as flight instructor.

(c) *Instrument time.* Instrument flight time may be logged as such by the pilot actually manipulating the controls and only when the aircraft is flown solely by reference to instruments either under actual or simulated instrument flight conditions.

43.405 *Recent experience requirements.*

43.4050 *Passenger flight.*

(a) *Day.* A pilot must not pilot an aircraft carrying any passenger unless, within the preceding three calendar months, he has made and logged at least five take-offs and five landings to a full stop in an aircraft of the same type and class.

(b) *Night.* A pilot must not take off or land an aircraft carrying passengers during the hours of darkness unless he has made and logged at least five take-offs and five landings to a full stop during the hours of darkness within the preceding three calendar months.

43.4051 *Instruction flight.* A flight instructor must not give certified flight instruction unless within the preceding twelve calender months he has either:

(a) given at least ten hours of flight instruction while appropriately rated, or

(b) has demonstrated to the Administrator his continued proficiency.

43.4052 *Instrument flight.* A pilot shall not pilot an aircraft under instrument flight rules unless he has had at least six hours of instrument flight during the preceding six calendar months or until he has logged six hours of such flight time under:

(a) actual instrument conditions, accompanied by a pilot of at least private class holding an appropriate aircraft and instrument rating,

(b) simulated instrument conditions in an aircraft, accompanied by a pilot of at least private class holding an appropriate aircraft rating, or

(c) simulated instrument conditions in equipment approved by the Administrator, except at least 3 hours must have been logged in accordance with paragraph (a) or (b).

43.406 *Use of liquor, narcotics, and drugs.* A pilot or member of the aircraft crew in flight must not be under the influence of intoxicating liquor or use any drug which affects his faculties in any manner contrary to safety. A pilot must not permit any person to be carried in the aircraft who is obviously under the influence of intoxicating liquor or drugs, except a medical patient under proper care or in case of emergency.

43.407 *Towing by aircraft.* A pilot must not tow any object by aircraft unless authorized by the Administrator.

43.408 *Dropping objects or things.* A pilot must not permit any object or thing to be dropped from an aircraft in flight except fine sand, fine lead shot, fuel, or water, all unconfined, unless authorized by the Administrator.

43.409 *Acrobatic flight.* A pilot must not intentionally fly an aircraft in acrobatic flight:

(a) carrying a pay passenger,

(b) carrying any person unless all occupants are equipped with approved parachutes, or

(c) carrying any person seated at operative dual controls other than a private or higher class pilot or a student receiving flight instruction.

43.410 *Parachutes.* The pilot must not permit other than an approved parachute that has been packed within the preceding sixty days by a certificated parachute rigger to be carried in the aircraft in a manner available for emergency use.

43.5 STUDENT PILOT LIMITATIONS

43.50 *General limitations.* A student pilot must not pilot an aircraft carrying a passenger and must not pilot aircraft for hire or reward or in furtherance of a business.

43.51 *Requirement for first solo.* A first solo flight must not be made until the student is found competent by a flight instructor to make such flight and authority therefor has been endorsed by such instructor on the student pilot certificate.

43.52 *Flight area limitations.* A student pilot must not pilot an aircraft outside a local flying area designated by his flight instructor until:

(a) he has logged at least ten solo flight hours;

(b) he has passed the written examination required in Part 20 of the Civil Air Regulations for cross-country flight; and

(c) his student pilot certificate has been appropriately endorsed by a flight instructor.

43.53 *Aircraft limitations.* A student pilot must not pilot an aircraft other than that of the type, class, and horsepower range which has been endorsed on his student pilot certificate by a flight instructor.

43.54 *Recent experience.* A student pilot who has not piloted an aircraft within ninety days must not pilot aircraft in solo flight until he has passed a satisfactory flight check given by a flight instructor and that fact has been endorsed by such instructor on the student pilot certificate.

43.6 PRIVATE AND COMMERCIAL PILOT LIMITATIONS

43.60 *Private pilot.* A private pilot must not pilot aircraft for hire.

Note: The sharing of expenses incurred during flight is permitted under the terms of this section.

43.61 *Commercial pilot.* A commercial pilot may exercise the privilege of a private pilot and in addition may pilot aircraft carrying passengers or property for hire or reward or in furtherance of a business.

43.62 *Airline transport pilot.* An airline transport pilot may exercise the privileges of a commercial pilot with an instrument rating.

43.63 *Rating record requirements.* A private or higher class pilot must not pilot an aircraft unless there is attached to his pilot certificate the appropriate rating record issued by the Administrator, and he must not pilot any aircraft carrying passengers otherwise than in accordance with the limitations set forth in his rating record.

Note: §43.63 does not permit a pilot who by reason of §29.2 has been limited to the operation of a particular make or model of aircraft or a general type of aircraft to operate other makes or models or other general types.

43.64 *Flight instruction limitations.* The following rules govern flight instruction.

43.640 *Aircraft.* Aircraft operated in flight instruction must be equipped with fully functioning dual controls.

43.641 *Flight time.* A flight instructor must not give more than eight hours of dual flight instruction in any twenty-four-hour period and not more than thirty-six hours of dual-flight instruction in any seven-day period.

43.65 *Instrument flight limitations.* A pilot must not pilot aircraft under instrument flight rules unless he holds a valid instrument rating issued by the Administrator or a valid military instrument rating issued by his service.

43.66 *Instrument instruction.* Instrument flight instruction may be given only by a person holding a valid instrument rating. A flight instructor rating is not required.

43.67 *Simulated instrument flight.* Aircraft must not be flown under simulated instrument flight conditions unless:

(a) fully functioning dual controls are installed in the aircraft,

(b) an appropriately rated pilot occupies the other control seat as safety pilot, and

(c) such safety pilot at all times has adequate vision forward and to either side of the aircraft, or a competent observer occupies a position in the aircraft so that his field of vision adequately supplements that of the safety pilot.

PART 60—AIR TRAFFIC RULES

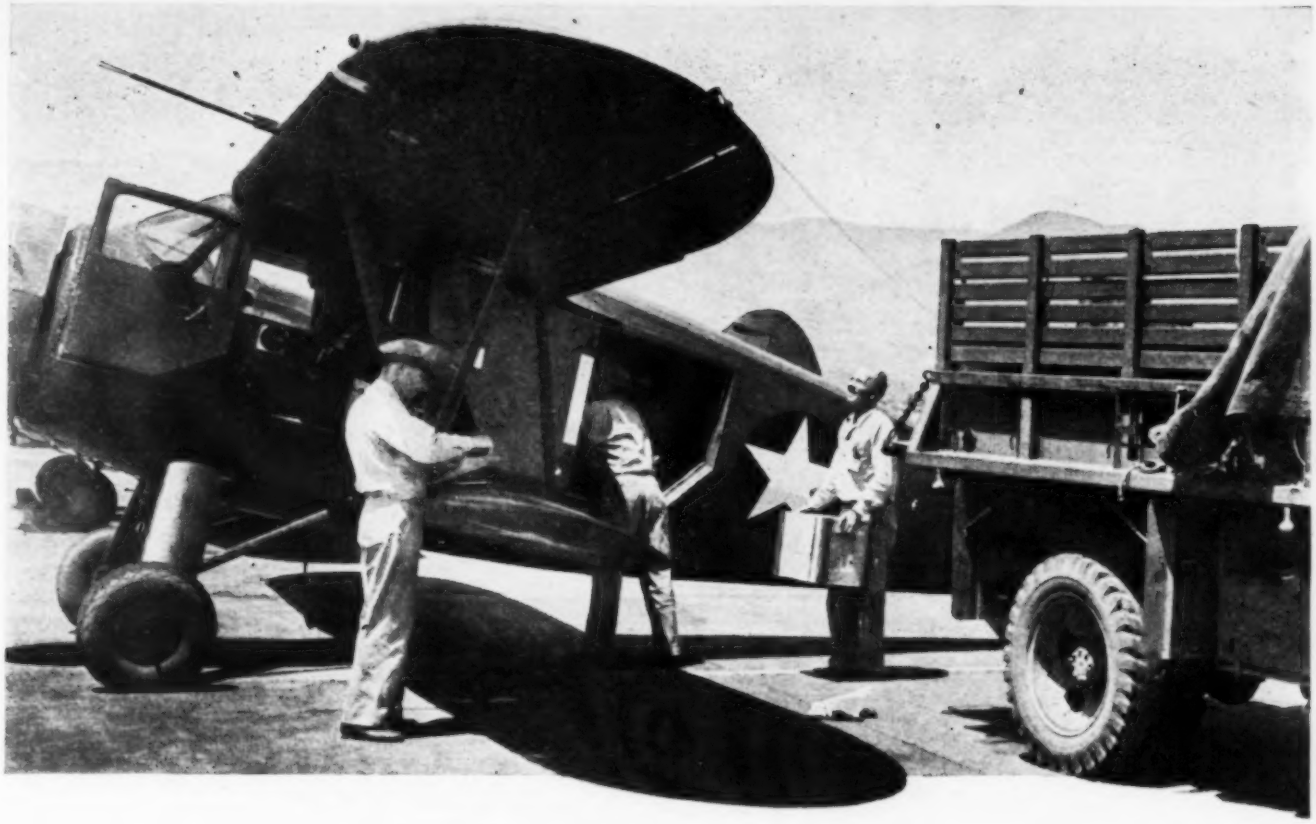
The following air traffic rules apply to all aircraft operated anywhere in the United States except as otherwise noted or to the extent that they are modified by other parts of the Civil Air Regulations governing air carrier operations.

Note: When non-compliance with any of the air traffic rules is desired for a particular activity, the Administrator may issue a certificate of waiver for a limited period of time. Application for such a waiver for a proposed air meet shall be made at least fifteen days in advance.

60.1 GENERAL FLIGHT RULES (GFR)

60.10 *Reckless operation.* Aircraft shall not be operated in a reckless or negligent manner so as to endanger the life or property of another person.

60.11 *Airspace restrictions.* Areas within which the flight of aircraft is restricted are marked on current aeronautical charts and published in the Weekly Notice to Airmen. Aircraft operating within these areas shall comply with the restrictions prescribed by



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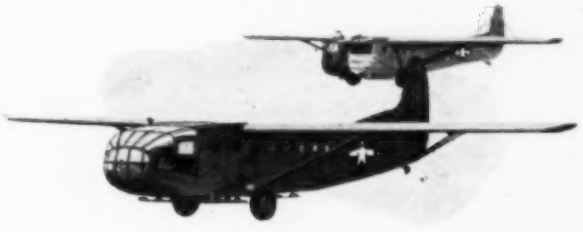
In 21 months, seven WACO planes—six- and eight-year-old passenger models converted to cargo service—have flown more than 1,000,000 miles and have handled more than 2,036,448 pounds of high-priority freight and mail for the Cargo Division of Southwest Airways Company. No wonder Southwest calls them "the WACO work horses!"

In this operation, one of the nation's first true feeder airline services, these sturdy WACOS have flown a steady 2,600 miles a day between army bases and supply depots in the California-Arizona area . . . have completed 2,961 schedules . . . have made more than 28,000 takeoffs and landings in heavy traffic . . . without accident and without damage to a single pound of freight!

Here, again, is WACO dependability in the traditional WACO manner . . . the reliable flight performance that awaits you in the spanking new WACO you'll want to own after the war. THE WACO AIRCRAFT COMPANY, 91 Peters Avenue, Troy, Ohio, U. S. A.



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Waco

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the agency having jurisdiction over these areas.

60.12 *Right of way.*

(a) Proximity. Aircraft shall be flown at least 500 feet apart except by prearrangement.

(b) Converging. When two aircraft are on crossing courses at approximately the same altitude, the aircraft on the left shall give way.

(c) Approaching head on. When two aircraft are approaching head on, or approximatey so, and there is danger of collision, each shall alter its course to the right.

(d) Overtaking. An overtaken aircraft has the right of way and the overtaking aircraft whether climbing, descending, or in level flight, shall alter its course to the right.

(e) Landing. An aircraft while landing or maneuvering in preparation to land has the right of way over other aircraft in flight or on the surface. Aircraft at a higher altitude shall give way to aircraft at a lower altitude.

(f) Distress. An aircraft in distress has the right of way over all other traffic.

60.13 *Aerobatics.* Intentional aerobatics shall not be performed over the congested areas of cities, towns, settlements, or open air assemblies of persons, or in control zones, or when visibility from the aircraft is less than three miles.

60.14 *Minimum safe altitudes.* Except when necessary for taking off and landing, aircraft shall be flown:

(a) when over the congested areas of cities, towns, settlements, or open air assemblies of persons at an altitude sufficient to permit an emergency landing outside such areas or in any case at least 1,000 feet above such areas, and

(b) when elsewhere than as specified in (a), at least 500 feet in any direction from any person or place of human habitation.

60.15 *On and in the vicinity of airports.* Aircraft shall be operated on and in the vicinity of airports in accordance with the following rules:

(a) Prior to and during taxiing, taking off, and landing a pilot shall:

(1) observe other traffic and take precaution to avoid collision,

(2) conform to the flow of traffic, and

(3) if an airport traffic control tower is in operation, maintain contact with such tower, either visually or by radio, so as to receive any traffic control instructions which may be issued.

(b) After taking off or when approaching for landing, all turns shall be made to the left unless a different procedure has been authorized by the Administrator for the particular airport or unless otherwise instructed by a control tower.

(c) If a landing is not intended, aircraft shall be flown so as to avoid the traffic pattern formed by aircraft landing and taking off.

60.16 *Traffic control instructions.* An aircraft shall be operated in control areas and control zones in accordance with any traffic control instructions received from a control center or control tower.

60.17 *Aircraft lights.* During the hours of darkness:

(a) all aircraft in flight shall display position lights,

(b) all aircraft parked or moved within, or in dangerous proximity to, the useable portion of any airport used for, or available to, night flight operations shall be clearly illuminated or lighted, or the area marked with obstruction lights.

Note: Seaplanes on the water are required to display the lights as prescribed by regulations of the United States governing the navigation of vessels on water.

60.18 *Weather minimums.* Aircraft shall be flown under conditions equal to or better than the following unless operated in accordance with instrument flight rules or unless otherwise authorized by a control tower or control center:

		Inside a control zone	Outside a control zone but inside a control area	Elsewhere
Visibility	Above 1,000 feet	3 miles*	3 miles*	1 mile
	1,000 feet or below	3 miles*	1 mile	1 mile
Proximity to clouds	Above 800 feet	500 feet vertically 2,000 feet horizontally	500 feet vertically 2,000 feet horizontally	500 feet vertically 2,000 feet horizontally
	800 feet or below	500 feet vertically 2,000 feet horizontally	Clear of clouds	Clear of clouds

*When traffic conditions permit, a traffic clearance will be issued by a control tower or control center when the visibility is less than three miles but not less than one mile.

60.2 INSTRUMENT FLIGHT RULES (IFR)

60.20 *Preflight action.* Prior to making a flight under instrument flight rules, the pilot shall determine that the flight can be made with safety, taking into consideration current weather reports and forecasts, fuel requirements, and an alternate course of action in the event that the flight cannot be completed as planned.

60.21 *Minimum altitudes.* Except when necessary for taking off or landing, aircraft shall be flown more than 1,000 feet above the surface and at least 1,000 feet from any obstruction.

60.22 *Cruising altitudes.* Except for necessary ascent or descent aircraft shall be flown at the following cruising altitudes:

(a) *Inside a control area or control zone* —at altitudes authorized by the control center or control tower.

(b) *Elsewhere:*

1. 0° to 89°—at odd thousands of feet (1,000, 3,000, etc.)
2. 90° to 179°—at odd thousands plus 500 ft. (1,500, 3,500, etc.)
3. 180° to 269°—at even thousands of feet (2,000, 4,000, etc.)
4. 270° to 359°—at even thousands plus 500 ft. (2,500, 4,500, etc.)

60.23 *Flight in control areas.* The following rules apply to any flight within a control area or a control zone:

60.230 *Flight plan.* Prior to taking off from any point within or prior to entering a control area or control zone, a flight plan shall be filed with the appropriate control center or control tower unless otherwise authorized by such control center or control tower. The flight plan shall contain the following information:

(a) aircraft identification mark,
(b) type of aircraft,
(c) name of the pilot,
(d) point of departure,
(e) cruising altitude or altitudes *above sea level* and the route to be followed,
(f) point of first intended landing,
(g) intended cruising airspeed,
(h) time of departure,
(i) estimated elapsed time until arrival on the ground at the point of first intended landing,
(j) the alternate airport or airports, and
(k) the amount of fuel aboard (in hours of normal cruising consumption).

60.231 *Alternate airport.* At least one alternate airport must be specified in the flight plan where the weather reports and forecasts indicate the weather conditions will be, at the time of expected arrival, at least equal to the weather minimums required for flight under general flight rules (§60.18).

60.232 *Fuel requirements.* When the point of first intended landing lies within a control area or a control zone, sufficient fuel and oil, considering the wind and other weather conditions forecast, shall be carried:

(a) to complete the flight to the point of first intended landing, and thereafter,

(b) to fly to and land at the alternate airport designated in the approved flight plan, and thereafter,

(c) to fly at normal cruising consumption for a period of forty-five minutes.

60.233 *Traffic clearance.* Prior to making a flight in a control area or control zone, a traffic clearance shall be obtained from the appropriate control center or control tower. No deviation shall be made from the requirements of a traffic clearance unless an emergency situation arises which requires immediate decision and action, in which case, as soon as possible after such emergency authority is exercised, the pilot shall inform the proper control center or control tower of the deviation.

60.234 *Communication contacts.* The pilot of an aircraft shall maintain a continuous listening watch on the appropriate radio frequency and report by radio as soon as possible to the appropriate communications station the time and altitude of passing each radio fix or check point specified in the approved flight plan, together with unanticipated or unusual weather conditions being encountered.

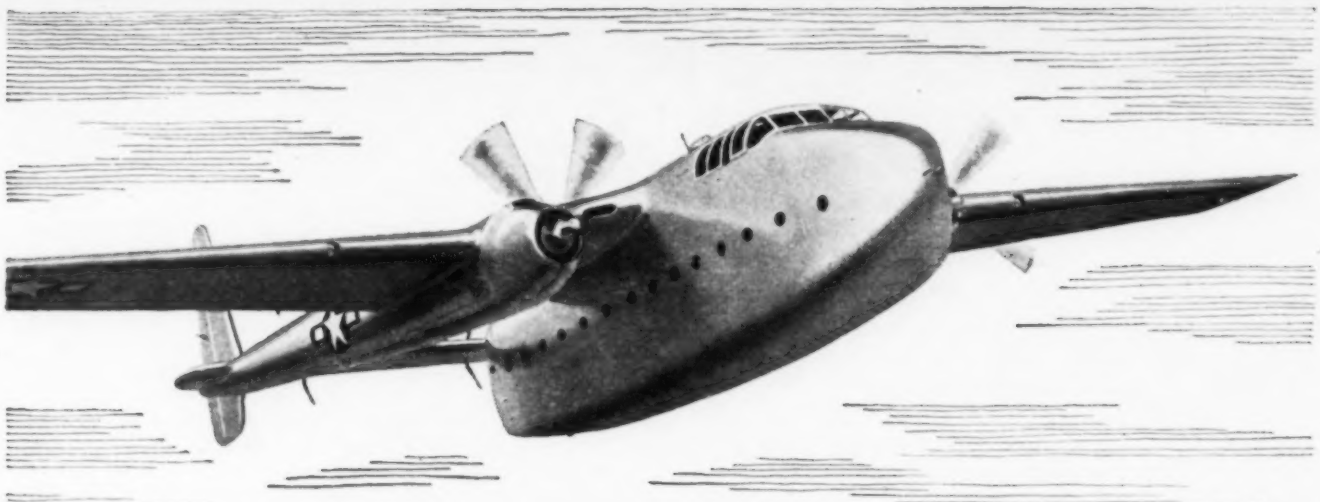
60.235 *Communication failure.* If unable to maintain two-way radio communication, the pilot shall observe one of the following procedures in the order listed:

(a) proceed according to the current flight plan, maintaining the last acknowledged assigned altitude until the approach time last authorized, at which time a landing may be made, or

(b) proceed in accordance with general flight rules, or

(c) land as soon as practicable.

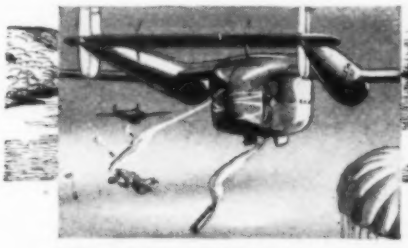
60.236 *Notification of arrival.* After a traffic clearance has been received, the pilot shall, upon landing or upon completion of the flight as cleared, file an arrival or completion notice with the nearest communications station.



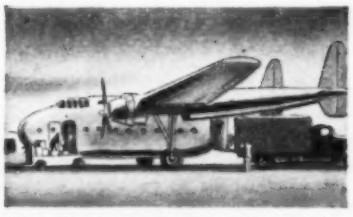
FAIRCHILD ANNOUNCES

The PACKET

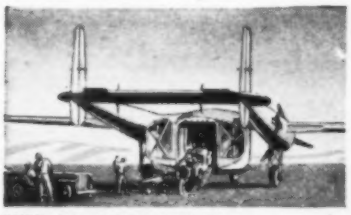
FOR AIR CARGO



THIS FLYING BOXCAR in military operation can carry 42 fully equipped paratroops and deliver them through *two* rear end jump doors at either side of the huge fuselage. Paracans of equipment are released through bomb bay doors beneath the plane.



LOADING MADE EASY, another Packet feature. A huge split door in the stern, a smaller freight door forward simplify loading and unloading of cargo. The cargo floor parallels the ground *at loading truck floor level* eliminating the need for hoisting devices.



OVER 3,500 MILE RANGE means speedy delivery of vitally needed supplies in military operations—cargoes measured, not in pounds, but in *tons*. Today, for the Army; tomorrow, it's yours!

The PACKET is designed *specifically* to transport cargo and troops by air...to carry boxcar loads at air express speed. It was born of a wartime need. The Army presented the problem to Fairchild engineers:

Build a plane that can utilize average airports and fly long or short distances economically—a plane with huge cargo capacity, for men, guns, trucks, ammunition or equipment.

Such a plane is The PACKET. It is in the air today, the first of many to undergo rigid flight tests. An all-metal, high-wing monoplane, The PACKET is powered by two 2100-horsepower engines. It is designed to operate with the simplicity and economy of twin-engine airplanes.

Fairchild engineering experience has given The PACKET another invaluable quality. While today it can carry the weapons of war, tomorrow, with but minor modification, it can transport the goods of peacetime commerce.

It has the characteristic inherent in all Fairchild products—the "touch of tomorrow in the planes of today."

BUY U. S. WAR BONDS AND STAMPS

Fairchild Aircraft

Division of Fairchild Engine & Airplane Corporation, Hagerstown, Maryland

AIR POWER *In Action*

By TOM ASHLEY

BECAUSE strategic bombing had not forced a German surrender, air power critics were warming up to their old tunes last month. Then hell broke loose on the Western Front. Barrel-bottom "kids" and "old men" of the "ragged" Werhmacht pushed almost across Belgium before the weather cleared. Then Allied air power stopped them just short of the Meuse, started rolling them back and ran up new records in destroying German planes — 337 in one thirty-six-hour period and 241 in a single day.

The air was too cluttered with censorship, name-calling and complaints about over-optimism for a realistic understanding of what happened, although the weather got most blame. One fact was clear: Directed, or "robot," missiles spearheaded the German break-through at a time when bad weather grounded Allied air reconnaissance and defenses. The Allied lack of equal or superior directed missiles and defenses against them should etch deeply an important lesson. Peacetime neglect of technological aviation developments is fatal in war. Despite claims of U. S. and British pioneering with jet propulsion and rockets, the Germans are successfully using these weapons on the front while Allied counterparts remain conspicuous by their absence. As long as weather-proof, directed missiles are denied our combat forces, they will continue to be the victims of German surprise and ingenuity.

★ ★ ★

Misinformation Revived

Madame Genevieve Tabouis, who has been described more than a few times as having access to many of Europe's closest political and military secrets, has come up with some inconsistencies regarding the French air force of 1939-40. Writing for Fairchild Engine and Airplane Corporation's publication, the talented writer last month claimed France possessed 4,200 "first-line" planes "ready for action" at the beginning of the war, adding: "The quality of our models was revealed as superior to that of the German types." She said the Dewoitine 510 fighter "equalled the British Hurricane" but was later outclassed by the Spitfire; France's twin-engined reconnaissance planes were "faultless." But despite the alleged quantity of 4,200 "first-line" French planes superior to Germany's, the Luftwaffe had little difficulty in

B-29 OFFENSIVE AGAINST JAPAN is proving highly destructive because of accuracy. Here's an important Japanese aircraft center on Formosa showing multitudinous bomb hits. Enemy air strength in the Philippines is fed through Formosan staging centers such as this one. Heavy attacks have also been delivered against Formosa airfields and plants by U. S. Navy carrier-based bombers and fighters. A total of 2,748 enemy planes were destroyed in the Philippines from October 20 to December 25—1,515 by land-based aviation and anti-aircraft defenses and 1,233 by carrier units of the Third Fleet.
—(AAF Photo.)

LOSSES IN THE AIR WAR
November 26-December 25, 1944
(Does Not Include Probables or Damaged Totals)

	Europe		Italy		Southwest Pacific		Russia*
	Enemy	Allied	Enemy	Allied	Enemy	Allied	Enemy
Nov. 26	129	49	....	....	8	2	....
Nov. 27	111	31	....	....	10	....	....
Nov. 28	....	2	....	3	19	....	....
Nov. 29	....	11	2	....	17	....	....
Nov. 30	6	59	....	4	....	....	1
Dec. 1	32	27	....	3	10	2	....
Dec. 2	13	18	2	13	6	....	....
Dec. 3	....	....	....	7	8	2	....
Dec. 4	6	24	....	10	10	....	6
Dec. 5	95	23	....	....	9	2	15
Dec. 6	17	27	13	20	4	....	5
Dec. 7	6	4	....	1	108	10	3
Dec. 8	18	3	....	2	2	1	46
Dec. 9	1	4	....	28	22	....	66
Dec. 10	5	33	....	....	1	1	5
Dec. 11	....	2	2	25	9	....	32
Dec. 12	33	31	....	2	1	....	28
Dec. 13	....	....	....	4	51	9	13
Dec. 14	7	3	....	....	5	2	35
Dec. 15	....	8	....	10	13	....	58
Dec. 16	2	4	....	15	250	....	10
Dec. 17	6	25	55	29	25	1	19
Dec. 18	113	41	4	24	4	....	....
Dec. 19	63	14	....	9	59	1	8
Dec. 20	....	....	....	19	47	1	27
Dec. 21	....	4	....	1	24	5	68
Dec. 22	12	7	18	9	17	2	59
Dec. 23	276	90	15	....	32	1	54
Dec. 24	226	81	....	....	32	....	191
Dec. 25	176	108	12	48	37	1	55
TOTALS	1353	733	123	286	840	43	804
Totals since Jan. 1, '44	9387	8214	4039	3568	3470	407	13848

*RUSSIA: Does not reveal own losses.
CHINA: One hundred and fifty-two enemy planes destroyed at loss of twenty-eight. Totals since January 1, 961 enemy, 257 Allied.
PACIFIC: Three hundred enemy planes destroyed at loss of thirty-one. Totals since January 1, 5,273 enemy, 444 Allied.
SOUTHEAST ASIA: Six enemy planes destroyed at loss of seventeen. Totals since January 1, 404 enemy, 249 Allied.
MIDDLE EAST: No action reported. Totals since January 1, 77 enemy, 77 Allied.

(Note: These figures are compiled by SOUTHERN FLIGHT from daily headquarters communiques issued by the respective commands. They are, therefore, subject to periodic adjustment. Dates for Southwest Pacific are those on which figures are released; others when action occurred.)

Finish the Fight – with War Bonds

All-star Production

Long before the B-29's bombed Japan, the Boeing Superfortress was faced with its first great challenge. This was in the battle of production . . . the problem of establishing one of the greatest manufacturing programs ever attempted.

Producing the Boeing-designed Superfortress in quantity is a colossal example of team-work involving people and plants all over America.

Completed B-29's are turned out by Boeing plants at Wichita, Kans., and Seattle-Renton, Wash., and by the Martin and Bell aircraft companies as well.

Major assemblies are built by Briggs, Cessna, Chrysler's De Soto Division, General Motors' Fisher Body Division, Goodyear Aircraft, Hudson, Murray and A. O. Smith.

The Superfortresses' huge engines are manufactured by Wright Aeronautical and by Chrysler's Dodge Division. Their 16½-foot Hamilton Standard propellers by United Aircraft and Nash Kelvinator.

Literally thousands of sub-contractors and suppliers, from small shops to large factories, supply sub-assemblies, parts and equipment.

To Boeing fell the task of co-ordinating this vast, nation-wide manufacturing organization. Its engineers furnished design and engineering data to the other companies involved, and laid down the tooling plans.

Boeing production specialists blazed new trails in planning, developed new facilities, processes and manufacturing procedures on a scale never before tried. They had to execute the program in terms of other manufacturers, *and in Boeing plants at the same time.* For Boeing's own eventual schedule is approximately 75% of all Superfortress production.

After Japan is defeated, this unique experience, and this same Boeing ingenuity in research, design, engineering and manufacture will be turned to peacetime aircraft. And you can know of any product . . . if it's "Built by Boeing" it's bound to be good.

DESIGNERS OF THE B-29 SUPERFORTRESS • THE FLYING FORTRESS • THE NEW STRATOCRUISER
THE KAYDET TRAINER • THE STRATOLINER • PAN AMERICAN CLIPPERS

BOEING

The WORLD'S WINGS

By LUCIEN ZACHAROFF

BEHOLD Latin America, the continent of post-war economic seven-league strides. Yes, take a good look, particularly you, Mr. and Mrs. Airminded U. S. A.

Your neighbors to the south are setting out to emulate your example of aviation progress, perhaps with your help. They want to make their half of the hemisphere a beehive of aircraft production, of flight- and ground-crew training—military and civil—of, above all else, airline and private flying. Certain imperatives of geography, topography, and war-accelerated industrialization are abetting them. So, watch them zoom into the deep blue yonder.

Consider Brazil. Its 4,000,000 square miles exceed the area of the continental United States. It is enormously rich in vital natural resources, mostly undeveloped. Proud of its cultural heritage, strategically located in respect to Europe, Africa, and North America, populated by some 42,000,000, Brazil is buying more U. S. goods than any other Western Hemisphere nation. Of it Hitler said once: "We shall create a new Germany in Brazil. We shall find everything we need here."

In so important a country, transportation and communication are a foremost factor. Brazil's system of land and water transport is formidable but it does not begin to meet her needs. An overwhelming portion of the natural inland waterways and of the railroad network are serving the better developed states of Sao Paulo, Rio Grande do Sul, and Ninas Gerais. There is scarcely any land transport between these three and the other eighteen states.

One explanation is that distances are huge, terrain consists of jungle and is otherwise difficult. Scant populace in the interior makes cost per mile prohibitive to the very people who need up-to-date surface transportation. Hence, mulepack and oxcart constitute the prevailing mode of travel, consuming more time than a North American imagination can encompass.

Thus, we have the admission of Joao Alberto lins de Barros, Co-ordinator of Economy, that it is a third cheaper to freight rubber out of the upper Amazon by air than by the available railroad.

Happily, airlines do not have to face the obstacles of surface locomotion. They have made a flying start in enabling the Brazilian to step from his oxcart into the most modern and fastest vehicle.

Before the war, a network of airways thrived under the control of conquest-bent Nazi Lufthansa; it has been nationalized by Brazil. The PAA system, **Panair do Brasil**, and a southern loop service round out the commercial air transport setup. The Brazilian Army has opened up many otherwise isolated territories with its national airway service embracing 9,000 route-miles.

Very much more remains to be done. The Brazilian Air Force came into being only in 1941. Today it is patrolling 4,000 miles of coastline; its squadrons are engaging the Luftwaffe on the Italian front.

The United States has already made a contribution to the march of both military and commercial aeronautics in Brazil. The **Fabrica Nacional de Motores** is building Ranger engines under license. Fairchild F-24's and PT-19's, some built in Brazilian plants, are a common sight over those roadless expanses.

The great **Escola Tecnica de Aviacao**, operated by the Embry-Riddle School of Aviation (Miami) at Sao Paulo, has been turning out multitudes of technicians and skilled mechanics—no mean achievement in a land where youngsters do not grow up with automobiles and mechanical toys, as they do in our country.

For the future, Brazil and many another Latin American nation are sure to welcome a mutually satisfying and broadening collaboration in industry, transportation, and technical education. In the task of building for peace and prosperity, few fields are as promising as aviation in stimulating balanced economic growth, national and inter-American.

Writing in the December "Reader's Scope," my good friend, Walt Anderson, traveler in and long an authority on the other Americas, makes a statement concerning "the development of the vast resources of the boundless Amazon Valley" but applicable with equal force to the rest of the continent: "The task is truly titanic. . . . Perhaps Brazil cannot undertake it alone. It calls for planning; for the shifting of great populations into new cities prepared for them; for new means of transportation; for fearless thinking."

For the sake of true two-way Good Neighborliness, let us think fearlessly, and act. To think and act intelligently and beneficially the first requisite is accurate knowledge of the elements involved. It is gratifying to report that an organization is being set up for aeronautical-economic surveys, research and analysis of Latin-American opportunity. ★ ★ ★

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defeating the French Air Force. Madame Tabouis explains by saying the French high command failed to order large numbers of the Gourdou dive bomber (with which Madame alleges the French, not the Germans, developed dive bombing co-ordinated with land fighting); France had only two groups of the "faultless" twin-engined recco planes, and had no heavy bombers because the Air Ministry had long before the war decided "to leave heavy bomber production to the British."

Madame's discrepancies are obvious. The truth is that the French aircraft industry, Air Ministry, high command, political system and military organization were all shot through with sabotage, treachery and incompetence in general. Madame knows this perhaps better than we, for in the same article she writes as follows: "The deficiency of French aviation in 1939 was not due to the industrialists. Pacifist idealists in France refused to believe in war. The military authorities likewise refused to believe in aviation and, because planes were expensive, balked at the cost. The Air Ministry waited for war to break out before it would release the orders that were so necessary to national defense. Furthermore, and because it lacked the courage to face its responsibilities, the Ministry was reluctant to buy types which would become obsolete from one year to the next." In view of this statement, how can Madame Tabouis declare France had 4,200 first-line planes which were superior to the enemy?

We have interested ourselves in the Tabouis inconsistency because it is a rebirth of the same kind of misleading aviation writing which confused the world in 1939 and during the years preceding World War II. Too many famous journalists at that time overestimated French, United States, British and Russian air strength. Too many analysts underestimated the air resources of Germany, Italy and Japan. The net result was false complacency and security, undeveloped air forces, starving aircraft industries, crippled air training systems, undernourished research. After this war such journalists as Madame Tabouis should take extra caution to learn and broadcast the truth about preparedness among the great powers. If the French, American or British air forces are weak, the public should be told about their weaknesses. If the enemy possesses air strength, the public should know as much as possible about that strength and its potential. ★ ★ ★

BUILDING VERTICAL SKYWAYS

By WAYNE W. PARRISH

Publisher of "American Aviation" tells of Bell Aircraft's progress in helicopter development

"IN my estimation it will be some time before flying around the country in a helicopter becomes widespread. However, great strides are being made in the development of rotary wing aircraft. One outstanding achievement is Bell Aircraft's new helicopter which, largely through *two* ingenious innovations, has made possible both stability and precision control.

"One innovation is a two-bladed rotor, supported on a universal joint so that it is free to 'see saw' and at the same time to turn on its longitudinal axis. The second is a bar which, gyroscopically, tends to keep the rotor in its plane of rotation regardless of the position of the mast. This is a basic Bell Aircraft patent which works for stability under all conditions. It is found only in the Bell helicopter.

"The Bell helicopter represents a type of aircraft men have long wanted. It can take off and land on a very small plot of ground, and even in winds of nearly gale force it can fly up, down, backwards, forwards and sidewise—and still remain stable and under perfect control.

"When ceiling and visibility are too poor for a fixed wing plane to fly—then it's 'helicopter weather'—for the helicopter can slowly, safely feel its way through murk or fog.

"The helicopter will have many important industrial uses in the postwar world. Plans are already being formulated for its use in crop dusting, forest fire patrol, pipe line patrol, emergency rescue work, feeder taxis for airlines, executive travel, and many other peacetime applications.

"When this progressive company can turn its skills and resources to producing peace-time needs, look to the Bell helicopter to be one of the leaders in the postwar aviation field."

★ *Buy War Bonds and Speed Victory* ★

MEMBER AIRCRAFT WAR PRODUCTION COUNCIL...EAST COAST, INC.

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Flexible Gun Mounts and other ordnance materials

GEORGIA DIVISION
Marietta, Ga.
B-29 Boeing Superfortress

© Bell Aircraft Corporation

THE SKY'S THE LIMIT

(Continued from page 22)

also that the Army is forced to draft more and more people from twenty-seven up to thirty-eight. A part of this is to force these people out of civilian business into war plants. That is thoroughly desirable. Many of them will find it very difficult to change from a civilian business to a war plant on account of this transportation difficulty we have mentioned.

The thought we have is simply this: Americans are fast losing their opportunity to win the war in the shortest length of time. We have suffered too much overoptimism and, as a result, we have settled down in many instances to go our own private ways without regard to the war.

As a matter of fact, every American should realize that the war is the most important thing in our lives today. There is no escaping that. More and more of our earnings is being taken away from us before we even see it, to pay for this war that we are thoughtlessly prolonging. The situation is apt to get much worse. Today, we are killing young Americans at the highest rate in history. Today we are using up the product of American manpower at the greatest rate in history. Trucks, tires, shells, aircraft, all military and naval equipment and supplies are being lost at an alarming rate—far faster in some cases, than we are producing them.

It is read that Patton could have driven on to Berlin if he had not been forced to stop, gather additional supplies and wait until he had reorganized everything before going on. Whether this is true or not, it is known that many military aircraft spent their time carrying artillery shells across from England instead of bombs to drop deeper into Germany.

This rather proves that the political manipulation of the war has not been 100 per cent effective by any means, and we believe in the long run that the political direction of the war is more or less in line with the American public opinion. Thus, it seems that the American public opinion is the thing to be worked on first, if we are to achieve any improvement in the situation.

It may well be that the German and Japanese general staffs (which we have deprecated many times, to our great disadvantage) have fairly accurately analyzed the American situation. They realize the drain imposed upon American industry by Lend-Lease; by the attempt to supply the necessities for the countries we have taken over, and by attempting to supply our armed forces as well as a certain modicum of civilian economy, will sooner or later deplete our resources to the extent that we will be able only to hold our own and not show any overwhelming superiority of manpower and equipment against them. Stalemates in war have been known before. There have been a number of wars that lasted continuously for several generations. One war lasted for a hundred years. Those wars did not eventually result in either side winning. They were simply called off.

For us to reach such a state that we would have to mutually call it off or have a negotiated peace conceding many things to the Germans and Japanese, would be disastrous to us. It would actually mean the losing of the war.

If we cannot take from Germany and Japan some of the territory they have captured, they will be stronger than they ever were after a few years. And in the next war, we would be at an even greater disadvantage than we have been in this one.

Doesn't this mean to you and to me and to every American, that we should conserve, work and pay everything we can to help win this war quickly? Every day that is lost puts us that much farther behind. Every day that we slow up this war simply means that sooner or later we will have to pay for our negligence.

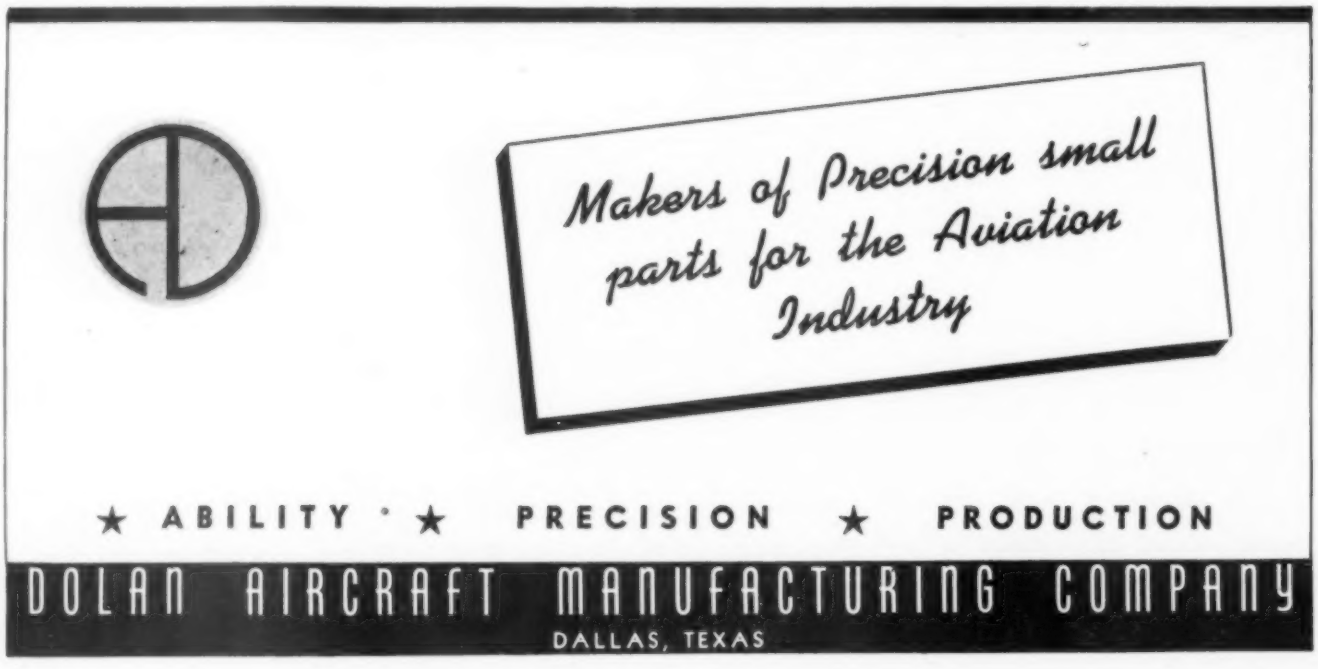
Every reader of this column (and unfortunately that isn't everyone) should redouble his efforts and should highly resolve not to rest until he has made every contribution to the war effort that is humanly possible. After all, we at home have many more facilities for helping the war along than those of our boys who are daily giving their lives. The blood of those boys is upon those who have failed them.

★ ★ ★

Civilians Must Champion Air Power

Aviation has not failed in its role in this war, by any means. In fact, it has been one of the most successful arms that we have. It is significant that we lost heavily in almost every engagement where we failed to have air superiority. Conversely where we did have air superiority, we have invariably won. Thus, if either side is to have air support, the winner must have it in superior quantity and quality.

The United States entered the war with meagre air power as compared to other nations. We have paid a terrific price for our negligence and lack of preparedness. We certainly hope that this experience will be utilized in the future to keep the United States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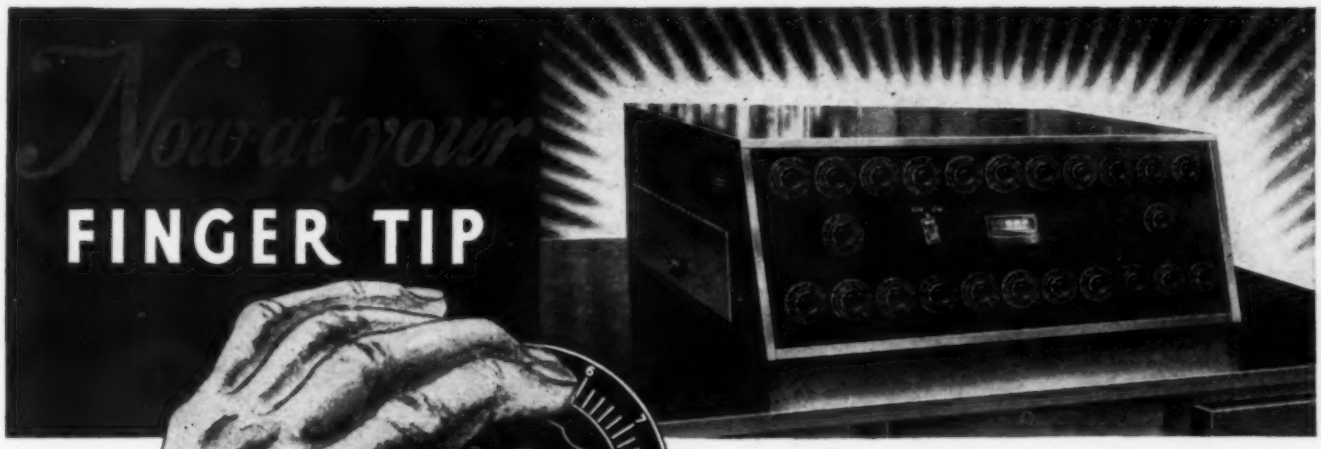

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A development of the Research Department of Phillips Petroleum Company, outstanding manufacturer of automotive and aviation fuels, working in conjunction with Engineering Laboratories, Inc.

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The principal amount of time now required in multicomponent analysis by spectrophotometry is due to lengthy mathematical computations. Often hours are consumed in solving the more complicated equations encountered. Now, however, by means of the E. L. I. SPECTRO COMPUTER, routine problems involving eleven simultaneous equations in eleven unknowns can be solved in five minutes. The more complicated equations can be solved in fifteen minutes. The instrument is compact and simple in design. The operation is basically electrical following a mathematical method of iteration. It is so simple to operate that a high school student after a half hour's instruction can obtain foolproof results within the accuracy of the spectrometer data.

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of America always better armed than any other nation.

Of course, the U. S. was inadequately armed in almost all other branches, too. Recently, the Army Ordnance Association, a non-political, non-official group, interested in the preservation of this nation through the maintenance of sufficient military strength, has made a determined and far reaching effort to align the manufacturers in this country with their set-up. They have sold thousands of life memberships to manufacturers and individuals in the last few months. They advance the notion that they will continue to publicize to their membership all the facts including engineering, designs and developments, plans, and statistics of our armed forces as regards ordnance, etc. They hope to keep these people continuously advised so as to be able to influence them and count on their strength in any national crisis. We think their efforts most laudable and we have hastened to join them. We think it would be well if every citizen of the United States joins some club or association whose sole purpose is to maintain the American way through defending this country against outside enemies.

There has not been any concerted move that we know of to enlist the good will, sympathy, and influence of the American people behind aviation. It is significant that the Army Ordnance Department is primarily interested in artillery, guns, and shells, etc. It is doubtful, if one looks at history, whether this association would work very hard for a strong air power.

Thus it remains for some other agency in the United States to work for a strong U. S. Air Force. It seems to us that the Civil Air Patrol and the Civil Air Patrol League, Inc., might well be the combination that would most ably defend and work for a strong U. S. Air Force. It has been with that thought in mind that we have consistently worked with and for the Civil Air Patrol.

(Editor's Note: After Mr. Green prepared this column, announcement was made of the organization by aviation leaders and business men of the Air Force League, which is enrolling civilian members in every state for the support of adequate air preparedness.)

★ ★ ★

Small Planes Vitally Needed

We note that the War Production Board has recently issued orders curtailing any increase in civilian consumer goods. This probably means the airplane of the future for private fliers is going to be delayed some more. We lament this very much.

There is no way that fast, satisfactory civilian transport can be accomplished as effectively, as efficiently and as cheaply, considering all essential and critical materials, as by private airplane. Let's take a few examples. The little airplane I mentioned in the November issue as being powered with a 185 hp. engine and which would cruise at 175 miles per hour, was weighed the other day and it weighed 1,450 pounds dry. That included a good deal of non-strategic material including wood. Aluminum is no longer critical and that included a good many pounds of aluminum. Horsehair and cotton cloth and synthetic paints are not critical and it included a number of pounds of those materials. This airplane will carry three people in its front seat, which is the width of a front seat in a Cadillac car and it will carry them 175 miles in an hour at an expense of ten gallons of 80 octane gasoline. Three people cannot ride 175 miles in one hour in a DC-3 airliner for 3.3 gallons of gasoline per person. Therefore, this airplane saves gasoline over any existing means of transport. Three people could not find many presently available automobiles that could carry them 175 miles at all, and which would not weigh at least 2,500 to 3,000 pounds. Therefore, if new automobiles are to be manufactured one of these days in order to augment transport they will weigh at least twice what this airplane weighs and will, therefore, utilize at least twice as much critical material. We therefore state again that this three-place airplane is much more efficient and effective both as regards cost of operation in critical fuel and cost of construction in critical materials.

At the present time, the most critical thing in the United States of America is manpower, and the most critical item in manpower is the supervisory and directing manpower. Thus any move of any kind which would augment the productive capacity of this supervisory and executive manpower would actually increase the manpower in those categories. This result can be obtained by saving this manpower every possible hour used in transport. Thus, we say that if enough of these little airplanes were made available to the personnel critically requiring such transport, it would be perhaps as great an improvement as any other that could be made. On this account, we hasten again to urge that the greatest consideration be given the manufacturers of small and medium but fast and economical airplanes so that these may be made available.

As we mentioned earlier in this column, we have the gravest misgiving about the reduction and depletion of our manpower. We have noted of late a considerable tendency among executives to be losing their grip. Only recently the head of a large war plant committed suicide. His work was not done but he was worn out. With the scarcity of manpower it will be hard to replace him and others. Some of them can be saved from wearing out if they can simply get around faster and easier.

It has become quite difficult to obtain priorities to travel on airlines even when on government business. We were requested some time back by the armed forces to visit them at a distant army camp to study some problems they had there. They were unable to give us a priority to make the trip. We had to send the engineer in a private airplane as no Pullman accommodation could be obtained and the man could not be expected to stay up all night, work all day, stay up all night again, come back here and keep on working. Sleep and rest are just as important today as they ever were.

It is nearly impossible to go on any overnight trip on the train and secure accommodations except by asking for them days and weeks in advance. Thus, there are no facilities for handling emergencies except private automobiles and private aircraft. Of late, we have experienced more and more difficulty in getting gasoline from our local ration board for our automobile used in company business. We find that they are cutting down on everybody. This is because of the scarcity of gasoline, presumably. There is no automobile that will make a long trip as cheaply as many of the newly designed aircraft as far as gasoline is concerned.

There are any number of small airplane manufacturers ready, willing and able, except for materials and components, to proceed with the manufacture and delivery of very useful aircraft. We would like to see everything possible done to permit these people to proceed.

Of course, it would not be to the best interest of the United States if these aircraft were to be sold to people not engaged in essential war or civilian work. Thus they would have to be rationed strictly until the war is over. ★ ★ ★

Airmen's Calendar

January 16-17—Hydraulics Meeting, National Aircraft Standards Committee, Stevens Hotel, Chicago.

January 17-18—Aeronautical Chamber of Commerce, Engine Technical Committee Meeting, Hotel Lexington, New York City.

January 18-19 — Government-Joint Meeting, Circuit Breaker, National Aircraft Standards Committee, Stevens Hotel, Chicago.

January 24 — Aviation Dinner of Charleston Chamber of Commerce, Ralph S. Damon, Speaker. Charleston, West Virginia.

January 24-26—American Meteorological Society Annual Meeting, Kansas City, Mo.

January 30-31—National Aeronautic Association Annual Business Meeting, Denver.

January 30-February 1—Thirteenth Annual Meeting, Institute of the Aeronautical Sciences, New York City.

February 11—Board Meeting, National Aviation Trades Association, Washington, D. C.

May 20-27—Pan-American Aircraft Exposition, Dallas.

FOR SALE

WACO: Model VKS-7F, NC 31676, 240 Continental, Curtiss Reed Propeller, five place Cabin, total time since new, 1290 hours, 90 hours since complete overhaul by factory, with all new cylinders installed, two way RCA radio, Gyro, complete blind flight group, outside and carburetor, Air Temperature, landing lights and flares, color: Fairchild blue. Complete airplane in perfect condition inside and out. Price $9250.00.

WACO: Model VKS7, 240 Continental, Curtiss Reed Propeller, five place cabin. Built in 1941, total time 1110 hours, 110 hours since major, no time since complete new cover, equipped with two way Lear radio, blind flight group, air brakes, and wheel pants, a beautiful airplane in perfect condition. Price $8750.00.

WACO: Model UKC, NC 14003, 220 Continental Engine, with rear exhaust, four place cabin. 970 hours total, 100 hours since engine major and complete recover of airplane, equipped with direct electric starter, generator, Lear receiver and loop, 20 watt springer transmitter, blind flight group, landing lights and flares. Price $3750.00.

FAIRCHILD: 24, four place deluxe with flaps, 145 Warner engine, total time on airplane 1210 hours, total engine 350 hours, 85 hours since factory major, equipped with Waller radio, complete blind group, complete airplane and all equipment in perfect condition. Price $5500.00.

WACO: Model CIC four place standard cabin, late type W-670 Continental with overhead lubrication, all new cover and upholstery, blind flight instruments and two way radio. Price $5000.00.

FAIRCHILD: 1935 Model, 145 Warner three place, no time since engine major at expense of $1350.00. New Waller radio. Price $4000.00.

WACO: UPF-7, NC 29910, 4324 hours total on ship. 25 hours since 100 hour check. 1824 total on engine, 290 since major. Equipped with two Kollsman sensitive altimeters, and standard instruments in both cockpits. Price $1550.00.

STINSON SR9-C, 260 Lycoming "D" engine with overhead lubrication, Smith electric propeller, five place, total time 2000 hours on airplane and engine, three hundred since complete major and recover, including all new heavy duty cylinders, new master and link rods, new shaft, total time on propeller 690 hours since new. This airplane completely reconditioned at no regard for expense to put it in perfect condition. Equipped with Lear transmitter, receiver and loop, landing lights, flares, blind flight instruments, leather upholstery, color is Fairchild blue. Price $9500.00.

Hamilton two position controllable propeller, in new condition, complete with controls, removed from 240 Continental Engine. Price $750.00.

Kilgore Flying Service, Inc.

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Northwest Becomes Transcontinental Carrier with Milwaukee-New York Route

By E. H. PICKERING

DESPITE Air Cargo meetings, NATA conventions, International Air Conferences and similar centers of activity, the outstanding news from the last month of the year centered around CAB activity.

In two decisions that set up a fourth transcontinental airline and established a fifth carrier between New York and Chicago, the CAB extended the route of Northwest Airlines from Milwaukee into New York via Detroit. PCA was granted entrance into New York out of Pittsburgh, limiting the service to flights originating at Chicago or south of Knoxville. PCA was also granted authority to operate Chicago-Detroit direct.

CAB Chairman L. Welch Pogue and Vice Chairman Edward Warner filed strongly dissenting minority opinions to the above decisions. In particular they objected to the paralleling features of the Milwaukee-Detroit and Pittsburgh-New York routes. It was Pogue's plan to encourage either a merger of the two lines, or an agreement providing for interchange of equipment between the lines.

In an exceptional move the CAB reopened the El Paso-Memphis via Oklahoma City case, decision on which was announced the previous month. In response to petitions of Wichita Falls and Lubbock for service on these routes, the Board has agreed to hear their requests. At the same time the rehearing petition of TWA on the case was denied.

Texas-Oklahoma Feeder Hearing

Announcement was made that the hearings on the Texas-Oklahoma feeder line cases will be heard in Ft. Worth beginning on January 31st.

United Air Lines has taken exception to the decision of the CAB in awarding the Denver-Los Angeles route to Western Air Lines as reported last month. Claiming that it has no desire or intention of agreeing to interchange of equipment with Western at Denver, United has requested a hearing of the case.

Air Conference Failed to Reach All Goals

The International Aviation Conference, closed in Chicago last month, fell short of its initial promises from the standpoint of concrete results. This was apparently due to the withdrawal of the Russian participation before the opening of the conference, and to the reluctant attitude of the British delegation toward accepting anything approaching complete freedom of the air. Final results indicate that practically all participants signed the agreements for technical standards and technical co-operative matters. As of mid-December twenty-seven signed the "Two Freedoms" agreement that provided for right of innocent passage and right of planes to land for servicing, as long as they did not take on or discharge passengers or cargo. Sixteen signed the "Five Freedoms" agreement, which closely approaches complete freedom of the air for commercial and private purposes. Great Britain signed the "Two Freedoms" but not the "Five Freedoms."

Braniff Slashes Express Rate on Perishables

Braniff Airways has announced a trial reduction of air express rates by 40 per cent on certain shipments with the principal intent of developing shipments of perishables out of the Texas Rio Grande Valley. The rates will be effective January until April.

PCA Suggests Detachable Cargo Section for Carriers

One of the features of the SAE Air Cargo meeting in Chicago early in December was the proposal of Pennsylvania-Central Airlines' Harry Pack for a freight plane with detachable cargo section. The entire compartment could be used as a truck's trailer for surface delivery of shipment. Each plane's tractor unit would have two or more compartments that could be used alternately, one to be available for loading while the other would be en route.

James Wooten, American Air Lines' cargo traffic manager, called for flight equipment engineered for cargo carrying, stating that freight costs will remain high while converted passenger equipment must be used for freight. Rather opposed to this view was the paper presented by Marvin J. Parks, Airplane Division of Curtiss-Wright, who claimed that most modern aircraft are designed for low-cost operation.

Airlines Get 20 Surplus Transports; 80 More Expected for Carriers Soon

Early in December twenty surplus transport aircraft were allocated to U. S. airlines. Of these, American received five, United three, Pan American, TWA, Eastern, and Northwest two each, Panagra, PCA, Braniff, and Western one each. Expectations are that an additional number that will bring the total near 100 will be declared surplus very soon. These surplus aircraft are types non-standard for army transport usage.

Prices so far established for these planes automatically allow for extensive reconversion charges and are set approximately as follows: Douglas C-47 (DC-3 type) $80,000; Douglas C-39 (DC-2 type) $40,000; Lockheed C-60 (Lodestar type) $56,000; Beech UC-45 (18-S type) $48,000. These prices do not include radio equipment.

It is understood that additional allocations will include planes for foreign airlines as well as U. S. domestic.

Domestic

Passenger load factor on the domestic airline system in 1944 was up 10 per cent over 1943 with a new high of 92 per cent. In 1935 the load factor was less than 50 per cent. . . . Laigh C. Parker, former general traffic manager for Delta, and now a Colonel with the Air Transport Command, has been awarded the Legion of Merit for "outstanding contributions" to ATC.

Braniff will resume operation of its Amarillo-Oklahoma City service this month. Service was suspended early in the war. The flight will be made as part of a Denver to Dallas schedule. . . . The Air Transport Association has appointed Perley Boone as Director of Press. Boone was formerly with the New York *Times*, and at one time was press relations head for the New York World's Fair.

American Airlines has published a new brochure entitled, "Here, There, Everywhere" a pictorial story of the part this airline has played in the war. . . . Central Airlines, feeder line applicant, has submitted a 719-page exhibit of economic data and operational expenses.

Foreign

American Export Airlines has contracted to operate a fleet of C-54's in overseas operations for the Air Transport Command. It is expected that the operation will be a transatlantic service. . . . TACA has been granted a Brazilian certificate to conduct an operation across the wilderness that separates Rio de Janeiro and Manaos on the Amazon in the heart of Brazil.

Pan American Airways has completed arrangements for the largest financing in the history of air transportation. The $25,000,000 issue has been underwritten by the Atlas Corporation, N. Y. Proceeds will be used for new equipment and associated development. Atlas Corporation will retain an interest amounting to approximately 3 per cent of Pan American total stock.

Essential civilians will be permitted to fly in international operations of the ATC on a pay basis beginning about the first of the year. Such travel will not be permitted to interfere with movement of military personnel or cargo, nor will it be made available where commercial service can handle the carriage. ATC system now totals over 160,000 route miles with the addition of a new 8,000-mile route to the Philippines via Hawaii and Saipan.

John Northrop Says Gas Turbines to Raise Transport Efficiency, Reduce Maintenance, Noise and Vibration

In a radio interview beamed to the South Pacific recently, John K. Northrop, president of Northrop Aircraft, predicted that gas turbines will power the airliners of the early future, claiming that they will come sooner than most people think. Lighter weight, more efficient, fewer moving parts, and reduction in noise and vibration are features of the gas turbine engines.

That the airlines may be using DC-4s and Constellations commercially within the year is a belief of Mr. Northrop, and that today's DC-3s and Lodestars will move down the ladder for shorter operations and in new foreign routes all in a greatly expanded air network.

Increase in efficiency of wing designs during the war, plus reduced aerodynamic interference in location of engines and other parts will reduce air transport operating costs. Use of radio developments should tremendously increase safety and dependability of operations. New planes can be expected to cruise in the 350-mile-per-hour range. All of these were further predictions of the Northrop broadcast.

The Martin Mars Stands for Safety!

CLIMBING ON 2 ENGINES: Demonstrating its high safety factor, the 72-ton Martin Mars gains altitude with 2 of its propellers fully feathered.

WHO will be tomorrow's overocean airline passengers? Recent surveys tell us that 45 is the approximate age at which the greatest number of airline trips are taken. Thus it seems likely that the majority of tomorrow's overocean passengers will be successful business men and middle-aged tourists who have earned the time and money to travel abroad. Older, more conservative, they will probably be swayed by considerations of safety—will undoubtedly prefer flying boats, like the Martin *Mars*, for transocean air travel.

Mars Transports Stress Safety

As a flying boat, the *Mars* possesses greater inherent safety than landplanes for extended overocean trips. Then, too, its huge size and strength give the added assurance that if forced down it could cope successfully with heavy waves. More, it has demonstrated its ability to remain aloft on only 2 engines, its wings are sufficiently thick to permit the crew to service the engines while in flight, and the most modern safety devices of every sort have been incorporated in its design. In safety, as in payload and low operating cost, the Martin *Mars* is second to none!

Tested and Proven in Service

Most important of all, the *Mars* has been tested and proven in regular transocean service with the Navy. All "bugs" have been ironed out, all findings have been incorporated in the 20 larger *Mars* transports now being built. As a result, war's end will find Martin production lines completely tooled and manned for prompt delivery of these ultra-dependable aircraft. *Airlines and shipping companies interested in information on commercial versions of the Mars,* write: THE GLENN L. MARTIN CO., BALTIMORE 3, MARYLAND

Martin
AIRCRAFT

Builders of Dependable Aircraft Since 1909

C-W Might Use St. Louis Plant for All Postwar Plane Work

Curtiss-Wright may concentrate all of its airplane division's manufacture in St. Louis after the war, it was reported last month. Curtiss officials, however, said new types of planes may be built in Buffalo.

Douglas and Wilson Head ACCA; Bell and Cohu New Governors

New officers and governors elected by the Aeronautical Chamber of Commerce last month are headed by Donald W. Douglas, board chairman, and E. E. Wilson, vice chairman of United Aircraft Corp., president. Wilson assumed management of the ACCA pending selection of a successor to Scott Russell. Lawrence D. Bell, president of Bell Aircraft, and La Motte Cohu, chairman of Northrop Aircraft, were added to the board of governors, increasing its membership to seventeen.

22,334 Trainers and Bombers Built in Wichita

Wichita, Kansas, airplane factories have produced 22,334 airplanes and 750 gliders since the beginning of the war, according to Brig. Gen. Ray G. Harris, commanding general for the Midwestern Division, Air Technical Service Command. In addition, the Wichita factories have built 31 per cent of all the trainers of every type and 74 per cent of the two-engine trainers. Fourteen Army and Navy "E" awards have gone to Wichita factories, according to General Harris.

96,369 Planes Produced in 1944 vs. 86,000 in '43; More B-29's, Fighters to Boost Schedules for 1945

Preliminary figures for 1944 aircraft production show the industry delivered approximately 96,369 airplanes during the year—11,000 more than were produced in 1943 and a record which may remain an all-time world record. December's total was 6,697 planes.

An output of 78,227 airplanes during 1945 has been scheduled, reflecting last-minute upward revisions from earlier schedules which called for 75,610, and the new year's output may yet be raised another notch. Fighters come in for the greatest increase, although B-29 schedules are steeply rising.

Company Totals

Individual company records reached unprecedented heights during 1944. A special survey by SOUTHERN FLIGHT showed the following production records:

North American Aviation, Inc., delivered 14,862 planes—about forty-three per day—during the year. Particularly outstanding was its Texas plant's record of 809 airplanes and equivalent parts during October during which its Inglewood, California, plant delivered over 625 fighters and parts.

Douglas Aircraft Company topped $1,000,000,000 in deliveries for the second year, producing 50,000,000 pounds more airframes and parts than in 1943. The 1944 poundage totalled 175,100,000 of which only 22,400,000 pounds were parts. Exact numbers of planes were not given, but the total represented one-sixth of all combat planes produced in the U. S.

Lockheed Aircraft Corporation delivered 5,858 P-38's and B-17's during the year, averaging 112 per week, which was at or above schedules. Lockheed poundage totalled 97,700,000, which included 12,700,000 pounds in spares. Limited deliveries of C-69 Constellations were inaugurated.

Consolidated Vultee Aircraft Corporation, producing fourteen different types of planes, delivered 9,387 aircraft, of which 4,074 were B-24's. The firm has delivered 30,159 planes and equivalent parts since Pearl Harbor.

Curtiss-Wright, which also increased its C-46 production, turned out its 15,000th P-40 in November to close the fifth year of Warhawk manufacture.

Seven companies comprising the Aircraft Production Council, West Coast, Inc., delivered a total of 23,703 airplanes in 1944 through November, and their December output of 1,488 planes carried the figure past the 25,000 mark. The Aeronautical Chamber of Commerce reported it was unable immediately to supply 1944 production totals.

250,000 Planes Since 1940

The industry-wide record of 96,369 airplanes during 1944 breaks down to eleven planes manufactured every hour of the day and night. Their dollar value was about $19,400,000,000, making the industry the world's largest. Since Pearl Harbor the industry has produced about 233,000 airplanes, and over 250,000 since January 1, 1941. The year to year record has been 19,290 in 1941, 47,973 in 1942, 85,946 in 1943 and 96,369 in 1944. (Since September, 1939, Great Britain has produced only 102,609 aircraft, according to preliminary figures, and Germany has produced, as of last May, only one-fourth as many planes as the U. S. Japan's pre-B-29 aircraft production was estimated by WPB to be only 13 per cent of the U. S. output. The percentages, if applied to 1944 U. S. output, would be 32,000 for Great Britain, 24,000 for Germany as of last May, and 12,610 for Japan prior to the B-29 offensive.)

Production Efficiency Boosted

U. S. production has been marked by increasing weight and power, with the average weight per plane delivered rising from 8,080 pounds to 10,500 pounds during 1944. The weight per combat horsepower, however, has been reduced 40 per cent in three years, emphasizing the use of more powerful engines. In January, 1941, only twenty-one pounds of airframe weight were produced per employe, but this rose to seventy pounds per employe in November, 1943, and ninety-six pounds per employe in August, 1944. The aircraft industry in August, 1944, employed 1,811,000 persons (including subcontractors' figures), a sizeable reduction from the 2,100,000 worked in late 1943. In 1942 a four-engine heavy bomber cost $500,000, but efficiency has lowered this to only $250,000. Super bombers such as the B-29 cost $1,000,000 now, but the price is dropping as production rises. Profits are the lowest in aircraft for any large war industry, being 1.5 per cent net after income taxes in 1943.

In January, 1944, there were eighty-one aircraft plants, and the problem of reconversion to peace was becoming a major one for the industry, which at best will use only a small fraction of its present facilities for peacetime operation. As of now, the industry is generally satisfied with the approach to contract termination adjustments as embodied in the new joint Army-Navy regulations, although policies covering cost-plus, fixed-fee contracts have not as yet been settled to the industry's satisfaction. Surplus disposal ranks with the matter of contract termination as a major problem—after the last war surplus aircraft and the engines glutted the market for years, retarding industrial and technological development.

New Model Skyfarers Readied by General Aircraft

New postwar models and production of Skyfarers are being contemplated by the General Aircraft Corporation of New Jersey, which has acquired the Skyfarer division from the General Aircraft Corporation of Delaware. The New Jersey company has also acquired the Delaware company's interest in Tennessee Aircraft, Inc., of Nashville, Tenn. Either the New Jersey company or Tennessee Aircraft will carry on the Skyfarer activities. The LeMars Manufacturing Company of LeMars, Iowa, will continue to build, under the name LeMars Skycoupe, the General Aircraft Model GI-80.

Dallas Plant to Build Fairchild's C-82 Packet; AT-6 Schedule Being Reduced by 40 Per Cent

Texas Division of North American Aviation, Inc., will build a large number of C-82 "Packet" cargo planes designed by Fairchild. North American said the arrangement was made under the first fixed-price contract resulting from competitive bidding held by the Army Air Forces since before the war. The Texas plant will do most of the manufacturing and all of the assembly for this contract. The largest subcontractor will be the North American Kansas City Plant.

Design and manufacture of necessary tools, assembly jigs, and conveyor lines will take several months, and it will probably be March before actual manufacture will begin. The Texas plant will continue producing P-51 Mustangs and AT-6 Texans.

Latest information concerning the Fairchild C-82 "Packet" cargo plane sets its weight empty at 26,530 pounds with a 42,000-pound gross and an alternate gross weight of approximately 50,000 pounds. This is sufficient to make it probably the most outstanding load-carrying plane from the standpoint of per-cent-of-gross-load useful efficiency. It is powered with two Pratt & Whitney R-2800 double Wasp engines with 2,400 hp. each available at 2,800 rpm. Range is given as about 3,500 miles, variable with load carried. It carries a military crew of five men, and can carry forty-two fully equipped paratroopers, or, used as an ambulance plane, can carry thirty-four litters and four attendants. Interior dimensions of the cargo compartment give it an approximate 2,300 cu. ft. capacity, as compared with the standard boxcar's 4,300.

B-32 Replaces Liberator in Ft. Worth Factory After Production of Over 3,000 B-24's, C-87's in 3 Years

More than 3,000 B-24 Liberator bombers and C-87 Liberator Express transports have been produced by the Fort Worth division of Consolidated Vultee Aircraft Corporation since initial production began on them early in 1942, according to Comdr. Roland G. Mayer, division manager. The last B-24 to be built in Texas left the assembly line late in December and the factory is speeding work on Convair's new B-32 Dominator bomber. Mayer stated that the Liberator and Express spare parts totaled 7,506,843, weighing over 40,000,000 pounds and valued at approximately $24,690,178.

D. J. Clow, chief industrial engineer, said that 2,068,215 man-hours, and materials amounting to hundreds of thousands of dollars, were saved at the plant during the past twelve months through employes' suggestions and cost improvement. The suggestion committee approved awards totaling $26,159.

Higher Efficiency and Throttle Temperatures Attained for GE Gas Turbines

Latest developments of the gas turbine, according to Guy Bartlett of the General Electric Company, include progress in aerodynamic design and metallurgy, resulting in better efficiency and higher throttle temperatures, and brought the physical size of the gas turbines into the range of practicability. The turbosupercharger, essential for high-altitude flying, is one type of gas turbine; the power plant of the jet-propelled airplane is another. The gas turbine is expected to be used in locomotives, aircraft and industrial applications. Basically, the modern constant-pressure combustion gas turbine consists of a compressor, combustion chamber and a turbine. Air is compressed to several atmospheres pressure, and then taken to the combuston chamber into which fuel is ejected. The burning of the fuel raises the temperature of the compressed air, which is passed through the turbine to produce power, the statement explained.

Work of three kinds is being done. One is in the field of high-temperature metallurgy; others are in the design, building and testing of different units with many variations as to size and arrangement; and the investigation of possible uses of the combustion gas turbine cycle.

Allison's Jet Engine Output Increased, Speeded For Early Combat

The need of speedy deliveries of jet propelled planes to the fighting fronts was emphasized in December by E. B. Newill, general manager of Allison Division of General Motors Corporation, in a statement to Allison employes. Newill said Allison's jet engine production schedules call for 35 per cent more output during the new year.

New Power Plant Types Being Developed by Pratt & Whitney

P. W. Pratt of the engineering department of the Pratt & Whitney Aircraft, division of United Aircraft Corporation, has been given a special assignment in connection with the development of new types of power plants, and Ross H. Begg will take over Pratt's former position. Pratt was project engineer on the 2100-hp., Double Wasp R-2800 engine, in a reassignment of duties announced recently. The promotion of Frank T. Sprogell to project engineer on the Twin Wasp R-2000 and R-1830 engines has also been announced.

Westinghouse Developing Jet Engine for Navy

Westinghouse Electric and Mfg. Co. is developing the first jet propulsion engine in this country that is free from foreign influence. The work is being done for the Bureau of Aeronautics, Navy Department. When completed, the new engine is expected to produce more pounds of thrust for a given amount of fuel and pounds of weight than any of the engines brought from Europe for study.

Duramold Moves to Jamestown, N. Y., While Firestone Goes to Burlington

The projected move of the Duramold division of Fairchild Engine and Airplane Corporation to a vacated Fairchild plant in Burlington, N. C., has been cancelled. The operations of the Duramold division are instead being moved to Jamestown, N. Y., from New York City, to occupy a plant formerly used by American Aviation Corporation, according to J. Carlton Ward, Jr., president of Fairchild. The Burlington plant was occupied by Firestone Tire & Rubber Company for the manufacture of 155-mm. and 90-mm. guns.

$5,000,000 Worth of Orders Booked for Republic's New Amphibian

Republic Aviation Corporation has reported its announcement of a postwar amphibian plane for private fliers attracted conditional orders totaling over $5,000,000 at the St. Louis Convention of the National Aviation Trades Association.

Alfred Marchev, president of Republic, has announced that the board of directors had authorized a special dividend of twenty-five cents a share, added to a similar amount paid March 10, making disbursement for 1944 fifty cents a share. It was also announced that the employment of the company was 17,248 men and women.

Kinner Motors Purchases Gladden Products Division

Kinner Motors, Inc., has purchased Gladden Products Division, according to Earl Herring, Kinner president. Gladden Products Division has been designing and manufacturing hydraulic equipment, including shock absorber struts, actuating cylinders, control valves, and other products being used on bombers and fighters. These products will continue under Kinner and Gladden employes will continue to operate at its present plant in Glendale, Calif.

Ryan Rushing $1,000,000 Building Expansion Program

A million-dollar building expansion program is under way at San Diego by the Ryan Aeronautical Company to provide additional facilities needed for the production of over $60,000,000 of Ryan fighting planes under Navy contracts, T. Claude Ryan, president, announced. Under the new construction program, a subassembly manufacturing building, and an additional 330-foot two-story office building are the two main units to be erected. A new surfaced parking lot, and 82,500 square feet of new paving for outdoor production work are included in the construction work. Smaller buildings for storage, salvage and the plant protection department will be built. One of three Ryan School of Aeronautics buildings was recently moved to the factory from its former location on Pacific Highway. Two other buildings will be moved after completion of the east end of Lindbergh Field's new runway. The new building program is being financed through Emergency Plant Facilities funds.

Beech Would Triple Stock

Planning to triple its common stock, Beech Aircraft Corporation will offer for approval at the annual meeting of the stockholders an increase in common stock from the present 500,000 shares to a proposed 1,500,000 shares. The par value and rights of the stock will remain unchanged. According to the settlement, the additional authorized stock will be held as a reserve. The directors have taken no action with respect to the use or issuance of the additional shares proposed. During 1944, Beech earnings were $6.76 per share of common stock.

Army Orders More P-47's

Republic Aviation Corporation has received a new order from the U. S. Army Air Forces for more P-47 Thunderbolts, according to Alfred Marchev, president of Republic. In making the announcement, Marchev said that the new order brought the backlog of the company's plants at Farmingdale, Long Island, and Evansville, Ind., to more than $600,000,000. Both plants are still increasing employment while operating on two ten-hour shifts.

Robinson in California

A West Coast division has been opened by Robinson Aviation, Inc., of New York City. The new division, located in Hollywood, California, will be managed by E. S. Titus, who has been transferred from the New York office. Increased use of Robinson Vibrashock mounting has necessitated closer contact with the West Coast aviation industry.

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PERSONALS

Carmichael Englebert

JAMES V. CARMICHAEL, former assistant manager, has been named as manager of the Marietta, Ga., division of Bell Aircraft Corporation, and ERNEST J. ENGLEBERT, former assistant manager of Douglas Aircraft Company's El Segundo plant, has been named production manager. They fill the gap left by the recent death of Carl A. Cover, division manager. . . . ARTHUR NUTT, who recently resigned as vice president of engineering of the Wright Aeronautical Corporation, has been appointed director of Packard Motor Car Company's aircraft engineering division, with offices in Toledo. . . . ROY C. SYLVANDER has been promoted from chief engineer to director of engineering of Bendix Aviation Corporation's Eclipse-Pioneer division, succeeding W. A. REICHEL, resigned. . . . LEOPOLD H. P. KLOTZ has been elected president of Luscombe Airplane Corporation, succeeding A. C. HASTINGS, JR., who retired December 1. . . . Pacific division, Bendix Aviation Corporation, has appointed DONALD T. BOODY liaison engineer, WILLIAM P. HARRISON, midwestern representative for hydraulic and electric equipment, with office in St. Louis, and EDWARD M. NASH, formerly with Lockheed, as hydraulic equipment salesman. . . . EDWARD R. BURN, former director of engineering and research for Aeronca Aircraft Corporation, has joined the Goodyear Aircraft Corporation research and development staff. . . . GOULD B. MARTIN, who resigned from Hamilton Standard Propellers, has assumed duties as publicity manager of Fairchild Engine and Airplane Corporation. . . . RICHARD E. GOULD, Frigidaire executive, has succeeded the late Charles S. J. MacNeil as chief engineer of Aeroproducts division of General Motors. . . . DR. HOWARD W. BARLOW has been elected dean of the School of Engineering at Texas A. & M. College. As far as is known, he is the only aeronautical engineer holding a deanship in a major institution of higher learning. . . . B. ALLISON GILLIES has resigned as vice president of Grumman Aircraft Engineering Corp., and will devote himself to consulting engineering work. . . . HAROLD BOOTH has been appointed sales promotion manager of Luscombe Airplane Corporation. . . . ASBURY MEADOWS, well known in the Southwest, is now directing activities of ESSAIR, the new feeder airline, for Maj. W. F. Long. . . . BOB BOURDENE has been named regional manager of the national industrial information committee of the National Association of Manufacturers, with office in Dallas.

Dr. Lewis of NACA Honored with Award

The "Spirit of St. Louis Medal" has been awarded to Dr. George W. Lewis for "meritorious service in the advancement of aeronautics." The award was made by the American Society of Mechanical Engineers in New York. Doctor Lewis is director of aeronautical research of the National Advisory Committee for Aeronautics. He is the sixth recipient of the medal.

New SAE Officers

J. M. Crawford, chief engineer, Chevrolet Division, General Motors Corporation, has been elected president of the Society of Automotive Engineers for 1945. Crawford succeeds W. S. James, chief engineer, the Studebaker Corporation, South Bend, Ind. SAE vice presidents include air transport, William Littlewood, engineering vice president, American Airlines, Inc., LaGuardia Field, N. Y.; aircraft, J. L. Atwood, executive vice president, North American Aviation, Inc., Inglewood, Calif.; aircraft engine, R. W. Young, chief engineer, Wright Aeronautical Corp., Paterson, N. J.

Louisville Convair Plant Sets New Safety Record

The Louisville division of Consolidated Vultee Aircraft Corporation has established a new safety record for the entire aircraft industry, according to Warner L. Jones, division manager. The Louisville plant, with a 1944 accident frequency of 1.75 per million manhours, has worked 3,033,401 manhours, 232 consecutive work days, without a lost-time accident, Jones said. The plant's second shift has not had an accident in 282 days. The Louisville plant record breaks the one held by Convair's Nashville plant, which had a national record of 2,337,980 accident-free manhours.

Brewer, Collier Awards

Dr. Edgar Fuller of Washington, D. C., has been awarded the Frank G. Brewer Trophy, and Capt. Luis de Florez, Pomfret, Connecticut, has been awarded the Robert J. Collier Trophy for 1943, according to the National Aeronautic Association. Fuller, assistant director of the Civil Aeronautics Administration aviation education, has been named the individual making the greatest contribution to the education of American youth in aviation in 1944. He was chosen for the award by a committee of the NAA on the basis of his work in assisting state governments to develop aviation education programs. Captain de Florez, USNR, has won the award for his contribution to the safe and rapid training of combat pilots and crews through the development of synthetic devices.

Benson With Radio Firm

Kenneth E. Benson, who has been chairman of the aviation committee of the U. S. Junior Chamber of Commerce and who served eleven months on anti-submarine patrol with the Civil Air Patrol, has recently been appointed sales engineer for Communications Company, Inc., Coral Gables, Florida. The firm's products cover the entire field of aircraft, aeronautical and marine radio equipment.

Firm Changes Name

The name of Aircraft Accessories Corporation last month was changed to "Aireon Manufacturing Corporation". President R. B. Walker said that while Aireon will continue production of aircraft and electronic equipment, it has developed a number of new products.

NEW PRODUCTS

Hydraulic Tube Fitting

Glenn L. Martin Company, Baltimore, has developed a new type hydraulic tube connection said to eliminate the tube flaring operation required with previous fittings. Simplification of installations in the shop and field plus greater resistance to vibration breakage is claimed. The new fitting is being made available through licensed dealers.

Corrosion-Proofing Carts for Engines

A portable corrosion-preventive service cart to handle the job of corrosion-proofing aircraft engines has been designed and is being furnished to ten aircraft engine builders, by the Youngstown Miller Co. The equipment is used to circulate a hot mixture of lube oil and rust preventive through aircraft engines, following final test runs. Each operation has been engineered to suit specific requirements of the type and size of engine. A modification of the unit has been furnished to aircraft builders for flight, pre-oiling aircraft engines after frame installations. The service carts insure balanced heating, control and have a capacity of fifty gallons of oil, company officials contend.

Automatic Gear Cutter

A new gear-cutting method involving a machine that cuts all gear teeth simultaneously with radially fed form-tool blades having a shear-cutting action has been announced by the Michigan Tool Company, Detroit. The machine is easy to operate and requires no particular skill. The cutting action of the machine is as follows: When the gear is automatically clamped, the head of the machine, containing the cutter head, automatically lowers and locks into position. The work then reciprocates vertically. At the beginning of each up-stroke, the blades are retracted slightly as on conventional gear-shapers to provide clearance for the tools. The amount that blades are fed into the work on each stroke is adjustable. Correct sizing of the work is also automatically controlled and adjustable.

New Bench Press

A new oil-hydraulic bench press has been introduced by the Denison Engineering Co., which is said to serve in many purposes. Called Multipress, the new press delivers up to four tons down stroke and up to 5,000 pounds "pull up." Multipress is self contained in a housing only sixteen-inch by twenty-six-inch by thirty-four-inch and weighs 745 pounds, according to the company, and was designed to use a variety of accessories enabling production operations such as pelleting, honing, broaching, peening, assembling, burnishing and straightening. Operation is accomplished by the use of manually-controlled levers.

Rubberized Slide Fastener

Development of a new rubber construction applied to metal slide fasteners said to make them waterproof and preventing escape of air or gasses has been announced by the B. F. Goodrich Company. Called Pressure Sealing Zipper, the construction is of overlapping rubber lips able to withstand the same amount of pressure as the fastener. The new type zipper can be applied to metal, fabric, or sheet rubber if clearance is allowed for operation of the fastener. Installation can be by stitching or cementing, depending on application, Goodrich announced. The seals are unaffected by temperature in a range of minus 70 to plus 150 degrees F.

Compar Moldings Resist Solvents

Molded washers, gaskets and seals made of synthetic resin are immune to oils and solvents, according to the Resistoflex Corporation, developer of Compar. Compar moldings such as diaphragms, and similar flexible moldings, are said to be out-performing rubber in some applications, such as instruments, oil and chemical pumps, fire extinguishers and as oil cups on hydraulic presses. The molded Compar is capable of several variations, giving exact degree of flexibility, elasticity and abrasion resistance required for particular application.

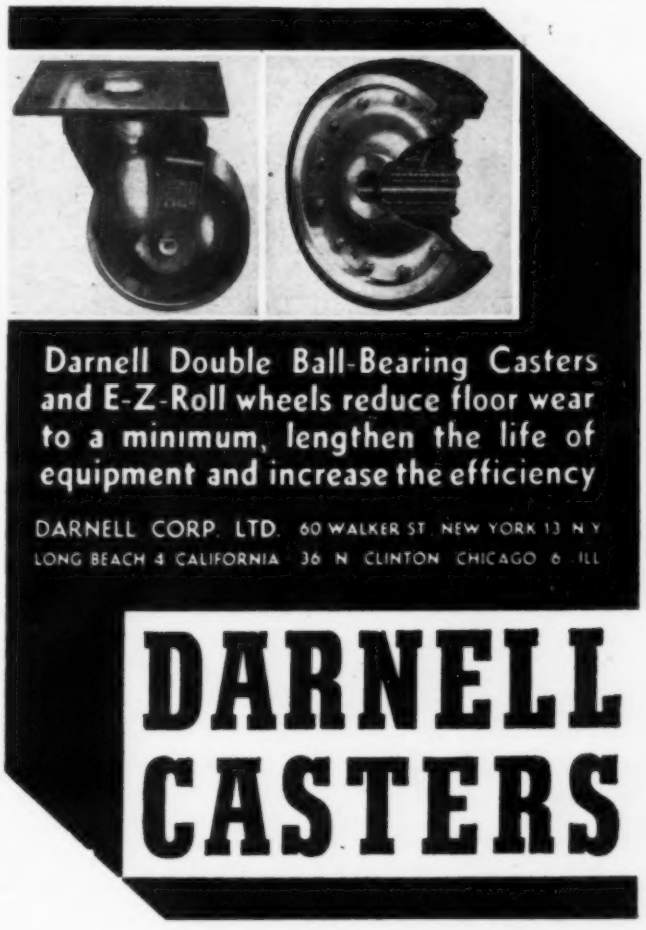
Power Brake Intensifier

A new unit for power braking on airplanes to permit faster braking action and lower pedal pressures has been announced by Pesco Products Co. It was designed to give more responsive pedal "feel" to the pilot. The unit, called "Univac," gives the pilot greater control and reduces hazards from unfavorable wind currents in ground maneuvering. The intensifier is suitable for medium size aircraft with special installations available for planes weighing as much as 30,000 pounds, Pesco officials said. The unit operates in conjunction with a Pesco vacuum pump mounted on the engine and produces braking pressure at a force of fifty pounds. It may be connected between the master cylinder and the wheel brake. The new unit weighs five pounds. No levers or rods are necessary.

Waterproofing Material

A material designed for water and airproofing all types of metal joints and for spot welding seams has been developed by The Dolphin Paint & Varnish Company, 937 Locust Street, Toledo 3, Ohio, and is being marketed to the aviation industry as No. 3909 Dolfinite Chromate Sealer. It contains pigments of high rust inhibiting qualities and is particularly adapted for use where long life and permanency is desired.

Withstanding a great variance of temperatures down to minus 60 degrees, it remains flexible and elastic.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CAA Endorses NASAO and NIMLO Legislation; Opposes NARUC Bill

The Civil Aeronautics Administration last month came out with a formal endorsement of proposed uniform state legislation represented by the National Association of State Aviation Officials' suggested "state aeronautical department act" and "state airports act", and the National Institute of Municipal Law Officers' proposed "model state airport zoning act".

At the same time the CAA announced its opposition to a state aeronautical bill proposed by the National Association of Railroad and Utility Commissions, which it described as "objectionable" on grounds that its provisions would be "extremely burdensome to both interstate air commerce and charter flying," calling its proposals both "unnecessary and undersirable."

Guards, Designated Landings Abandoned by CAB Amendment

Section 60.95 of the Civil Air Regulations were amended last month by the CAB to (1) waive requirements for maintenance of guards or for leaving unguarded aircraft in inoperative condition, and (2) abandon requirement that aircraft land only at formally designated places, with formal designation now required only for those fields at which aircraft are regularly to be based. Owners needing to base aircraft at points not now regularly designated may make application to the CAA Administrator for designation of areas which they wish to use. No change was made in the requirement for each individual flight of civil aircraft to be approved by the Defense Command in Eastern and Western vital defense areas, but the approval may be obtained in most cases through CAA. Military authorities may still require establishment of local flying areas for each designated landing area in certain congested areas, particularly in vital defense areas, but no flight clearance is necessary in vital defense areas when flights are confined to such local flying areas.

Combined Committee on Air Training Meets

Leading aviation officials of the Navy, Army, British and Canadian air forces met at the Naval Air Training Bases, Pensacola, Florida, early in December for a two-day conference of the Combined Committee on Air Training in North America.

Committee sessions were presided over by Brigadier General W. W. Welsh, U. S. Army Air Forces, chairman of the Combined Committee. Members of the committee present were Air Vice Marshal A. De Niverville, RCAF, member RCAF Air Council for Training, Captain S. C. Ring, USN, director of aviation training, Navy Department, Group Captain C. G. Lott, RAF, of the RAF delegation at Washington.

Rear Admiral C. A. Pownall, USN, Chief, Naval Air Training with headquarters at Pensacola, also attended the meetings.

Compressibility Limits on Cowlings Raised to 600-mph. Level

Research by the National Advisory Committee for Aeronautics has developed engine cowlings with critical speeds approaching 80 per cent of the speed of sound, or around 600 miles per hour (at sea level), John Stack, chief of the compressibility research division at NACA's Langley Field laboratory, said in the annual Wright Brothers Lecture sponsored by the Institute of Aeronautical Sciences.

Speaking before the Washington Aero Club last month on "Compressibility Flows in Aeronautics," he said the original NACA cowling, developed some sixteen years ago, had a critical speed in the range of 45 to 50 per cent of the speed of sound, or 342 to 380 mph. (at sea level), at which compressibility effects prohibited higher speed. New cowling forms in use today have raised the critical speed to nearly 500 mph. (at sea level). Newer cowlings will carry the limit on up to the 600-mph. mark, he said, but "much remains ahead as the problem of increasing speed is solved to the achievement of clock-stopping speeds in east to west flights."

Fourth of 23,391 Surplus Planes Reported Sold

The surplus war property administrator announced that 6,239 surplus planes had been sold and paid for as of December 1, 1944. A total of 23,391 planes had been declared surplus by the Army, Navy and other government agencies. The largest portion of the total sold were light civilian type planes. In addition, 911 former Army and Navy planes, largely trainers and liaison planes, were sold. All were sold through the Reconstruction Finance Corporation, the disposal agency for surplus aircraft.

The December 1st surplus inventory and status of sales by types follows: Liaison (one engine) 716 sold, 1,413 on hand; primary trainer (one engine) 180 sold, 7,354 on hand; basic trainer 1 sold, 3,417 on hand; advanced trainer (one engine) none sold, 95 on hand; advanced trainer (two engine) 2 sold, 1,410 on hand; reconnaissance (one engine) none sold, 119 on hand; reconnaissance (multi-engine) none sold, 13 on hand; fighters (one engine) none sold, 893 on hand; fighters (two engine) none sold, 56 on hand; bombers (one engine) 1 sold, 735 on hand; bombers (two engines) 1 sold, 406 on hand; bombers (four engine) none sold, 131 on hand; utility cargo (one engine) 10 sold, 111 on hand; light transports (two engines) none sold, 865 on hand; medium transports (two engines) none sold, 23 on hand; *rotary wing aircraft none sold, 6 on hand; *aerial targets none sold, 3 on hand; *gliders 38 sold, 916 on hand.

*Not included in grand total.

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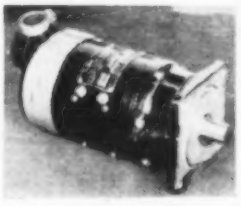
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BOOK REVIEWS

Command Pilot Log Book, *by an Air Force Officer, distributed by Haswell Book Store, Bryan, Texas, price* $2.50.

This is a pilot's log gotten up by a pilot. Big enough to hold many hundreds of hours, neatly classified. Part One headings include: type of aircraft, brief of the flight, total flight time. Part Two is a handy monthly summary.

The book is substantially bound and well printed on good paper. It may be ordered by mail from the address above.

Sank Same, *by William B. Mellor, Jr., published by Hoswell Soskin, 175 E. 45th St., New York City, price not stated.*

This first full-length book of CAP Coastal Patrol gives many interesting and previously unpublished stories about the unsung aerial "minute men" and their brothers-on-the-water, the Coast Guard Auxiliary.

The reporting is excellent but the humor, thrills and tragedy of these valiant units are but faintly shadowed. The real spirit of the CAP Coastal Patrol is yet to be captured in cold print.

Practical Manual of the E-6B Computer, *by Allan C. Zweng and Elmer F. Degon, published by Pan American Navigation Service, 12021 Ventura Blvd., No. Hollywood, Calif.*

Step by step problems, well illustrated, explain the use of the popular E-6B Computer for radius of action, off-course, interception, alternate airport and other dead reckoning problems.

Considerable space is devoted to the use of the slide rule face of the computer and a number of graphic solutions are also shown. Useful tables are included in the appendix. A valuable feature is a number of practical problems (with answers) for practice.

Plastic Molding and Plant Management, *by D. A. Dearle, published by Chemical Publishing Co., Brooklyn 2, N. Y., price* $3.50.

This book describes the technique of compression and injection molding and gives the solution to production and managerial problems. It also points out the future trends of the industry.

Helldiver Squadron, *by Robert Olds, published by Dodd, Mead & Company, 432 Fourth Ave., New York City, price* $3.00.

If you have been waiting for an outstanding story of brilliant Pacific battle action by the men of the Navy's aircraft carrier forces, then you will find it in this book. Taking off from their giant Essex-class flat-top, Squadron 17's hard-hitting dive bomber pilots and gunners saw their bombs burst and tracer bullets glare from Tarawa to the Marianas. "No crew of any carrier," reported the flat-top's captain, "has accomplished more or seen more action in so short a time."

Many unforgettable personalities enliven the pages, and the book is illustrated with photographs, sketches and maps.

The Aviation Annual of 1945, *edited by Reginald M. Cleveland and Frederick P. Graham, published by Doubleday, Doran & Company, Garden City, N. Y., price* $3.75.

Illustrated with sixty-four pages of photographs, this Annual brings American aviation up to the minute and previews the growth of the industry which will follow the war. Each chapter, devoted to a specific phase of air progress, has an introduction contributed by an expert on the subject with which it deals. Written by seasoned news editors and aeronautical writers, it is a book that should interest the general layman as well as the aircraft worker.

Clouds, Weather and Flight, *by Thomas C. Gilmer and H. Erich Nietsch, published by D. Van Nostrand Company, 250 Fourth Ave., New York City, price* $3.75.

Practical weather forecasting is made easy and interesting in this beautifully illustrated book for the flier who needs to know the weather he will meet, and for the layman who finds enjoyment in predicting tomorrow's weather. A number of clear-cut diagrams and sketches portray pressure areas, fronts, cyclones, flight paths, conditions governing gliding, and other facts about weather. The appendix includes weather maps, code tables, data on instruments and other useful material.

The Aircraft Annual, 1945, *by David C. Cooke, published by Robert M. McBride and Company, 116 East 16th St., New York City, price* $3.00.

Written so that it can be readily understood by any and all readers, regardless of their aviation background, this Annual gives a detailed history and analysis of all the new aeronautical developments of the past year. Much of its contents are from official Army, Navy, and Marine sources and from the leading aeronautical agencies and manufacturing companies. Illustrated, 288 pages.

Fighting Wings, *by Gilbert Paust and Milton Lancelot, published by Essential Books, 270 Madison Ave., New York City, price* $2.75.

This is the story of war in the air with over 250 authentic action photographs and descriptive accompanying text on aviation in World Wars I and II. Hundreds of modern combat planes of all types are shown executing their varied duties under all kinds of battle conditions.

NEW LITERATURE

The Journal of Commerce, *63 Park Row, New York 15, N. Y.,* has published "Transition Opportunities" — a summary of nearly 200 of the outstanding postwar trade potentialities. Prepared from data secured through key industrialists, government and trade association officials, the new publication calls attention to sales opportunities and supply problems in foreign and domestic markets, new peacetime products now in the demonstration stages, and warborn operating economies which industry will pass on to the consumer.

Copies may be had at 25 cents each from the New York Journal of Commerce.

Aircraft Tools, Inc., *750 E. Gage Ave., Los Angeles 1, Calif.,* offers a free copy of its new 178-page reference manual of small hand tools for aircraft production and maintenance. It is clearly written and indexed, and presents convenient price and ordering information. Request it on your company letterhead.

The B. F. Goodrich Company, *Akron, Ohio,* has a new catalog on Punch-Lok clamps and fittings for many purposes. Tools used in applying are also described. Available upon request.

Manual of Industrial Efficiency Rating, *by H. C. Steinmetz, published by The Harwood Company, 5626 Hollywood Blvd., Los Angeles 28, Calif., price* $1.00.

The author, Chairman of the Department of Psychology, San Diego State College, has designed this manual as a practical handbook of information for personnel workers and instructors and others interested in employe and student evaluation. 47 pages, paper covered.

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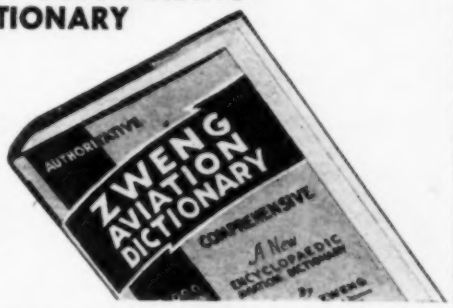

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Headquarters Warns Against Unlicensed Making of New Insignia

Shoulder-sleeve patches, believed to be made by unlicensed firms, have been reported to the national office. Local units are requested to communicate with Headquarters if other than licensed dealers try to sell the patches. Under an agreement made at the time of the transfer of CAP to the War Department, the Office of Civilian Defense still maintains licensing authority as to the manufacture and use of CAP official devices. Orders may be placed only through CAP supply officers and by direct dealings with authorized manufacturers. This is to keep people not in the CAP from wearing such indentifications. There is no preference as to any manufacturer; any company wishing to secure a license can do so through the ODT Insignia Division.

Nebraska Wing Operates Complete Aero Laboratory in Omaha High School

The Nebraska Wing has received much training material including training aids, manuals and films, and in Omaha a co-operative arrangement was made with the Board of Education for space in Technical High School for a complete aeronautics room to be used by the Civil Air Patrol and possibly by the school's students at a later date. Equipment in this room includes ninety-eight aircraft identification pictures, Navy Mark IV Navigational Trainer, plotting board, aircraft navigation plotter, synthetic compass, and a large scale electrically operated turn and bank indicator.

CAP Members Urged to Support Senate Bill 2193

Lt. Col. Frank E. Dawson, North Carolina Wing Commander, has circularized all Wing staff officers, Group and Squadron commanders to write to their Representatives and Senators in Washington, D. C., to support Senate Bill 2193 giving veteran recognition to active duty members of the Civil Air Patrol. The bill would give active-duty members of the Civil Air Patrol the rights and benefits of the "G. I. Bill of Rights."

New Hampshire Wing Active in Air-Marking

The New Hampshire Wing has launched a statewide movement to place air markers in accordance with CAA standards, according to Lt. Col. John F. Brown, Wing Commander. Col. Brown also announced that every unit would be called upon to organize crash and rescue squads. These squads are planned to be kept intact after the war so that they may lend assistance to civilian fliers in distress.

35,000 Attend War Bond Air Show in California

More than $500,000 worth of bonds for the Sixth War Loan were sold during the West Coast's first air show since the beginning of the war through the co-operation of the Army, First Group, Civil Air Patrol, California Wing, the Los Angeles *Examiner*, and United Flying Service. More than 35,000 persons were attracted to the event which featured display of Army aircraft, CAP formation flying, stunt exhibitions, Army combat maneuvers, message pick-up, a spot landing contest, bomb-dropping contest and supply parachute dropping. Members of the First Group, California, CAP supervised the events with the assistance of Army and United Flying Service personnel.

160,000 Cadets in British Equivalent of CAP; Makeup Described

The British have their CAP, too. It was first formed in 1938, and in 1941 was taken over by the Air Ministry and named the Air Training Corps. It is primarily for young men of pre-draft age.

At its peak, ATC membership was 210,000 cadets and now is about 160,000. In organization there are eleven regional commanders, one each in Scotland, Wales, North Ireland, and eight in England. Each has a staff of three service officers, one for training and two for administration, plus civilian clerical staff, all paid.

There is a district inspecting officer in charge of some sixteen to twenty squadrons. There are about 9,000 squadron commanders, each of whom receive King's commissions in a special branch of the RAF Volunteer Reserve. They receive official attachment with the RAF or Fleet Air Arm for a normal maximum of twenty-eight days a year.

Cadets do not serve as officers, but may be promoted on merit to corporal, sergeant, or flight sergeant. Squadrons average 100 members forming four flights. Two or more squadrons may form a wing. There are nearly 1,400 regular units and about 350 school units organized for students and ex-students of a particular school of the English public school system.

At the end of last year nearly 70 per cent of aircrew members entering the RAF had ATC training.

As is the case with CAP, co-operation is arranged with the Boy Scout organization for preflight training of boys under fifteen. However, there are no girls in ATC, but there are separate volunteer groups for girls interested in such training. ATC training is preflight, academic, physical, and military, and like CAPC, there is no flight training, although cadets do get rides in Army planes.

For each regular unit there is a civilian committee responsible for recruiting, administration of training grants from the air ministry, accommodations, and raising and control of funds.

Cadets go to RAF stations up to six visits per year, including annual training of seven days. Cadets pay one shilling six pence per diem for food. Last year 150,000 cadets received familiarization flights in service aircraft.

Proficient aircrew candidates received glider training in sail planes, straight soaring into the wind up to 100 feet. There were 93,000 launches in 1943. Seventy-eight gliding sites are in operation.

It is believed that ATC is long range, aimed toward the maintenance of air power, as is the CAP cadet program.

Coyote Hunt Scheduled by Oklahoma Volunteers

A coyote hunt was to be sponsored by CAP in Osage County, Oklahoma, early in January in conjunction with the cattlemen. The Wing asked for volunteer pilots and observers to aid in the spotting of coyotes and their destruction, and work in connection with ground crews hunting them with shotguns.

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SOUTHERN FLIGHT — P. O. BOX 750 — DALLAS 1, TEXAS

By TONY HAGMANN

St. Louis—The ADMA and the NATA conventions won top money for the month. C. R. Mooney, John H. Wilson, Mrs. Ena L. Pugh and Colonel Roscoe Turner gave the city a full house, which won the jack pot for the largest crowd of aviation folks gathered since way back. There was a Luscombe in the hotel lobby looking at an Aeronca set up "right over there" and a Laister-Kauffmann glider called the Yankee-Doodle Two suspended from the ceiling. There were 134 booths with doodads and doolollys and at least a thousand people walking around to see, talk about and inspect, every hour. Well, that is the way it seemed at the SOUTHERN FLIGHT booth.

The first day we roped to sign our register: Ed Bartholomew, Houston; Paul Kennedy, Southwest Airmotive, Dallas; B. J. Anthis, Goodyear, Dallas; Wes Raymond, Orlando, Fla.; Eddie Jackson and Bill Fuller, Globe, Ft. Worth; and Toni Adam, Kollsman Instruments, Elmhurst, N. Y. (Toni was the belle of the ball).

Mrs. W. A. Quillian and S. A. Frame, Buck's Flight School, Chattanooga; Ralph W. Page, Ferguson, Mo.; Tom Davis, Piedmont Aviation, Winston-Salem, N. C.; and Corley McDarment, Mayfield, Ky., called on us and petted Susie. Susie is the most English bulldog we've ever seen wrapped up in one bundle of dog. She graced and disgraced our booth causing lots of comments like: "Will she bite? Where did you get her?"

Cody Laird, Southeastern Air Service, Atlanta; Henry Heyman, New Orleans; Tom Eve, Southern Airways, Charlotte, N. C.; Bill Stroheimeir of Hawthorne, Orangeburg, S. C., were some of our most Southern signatures. Others with the deep accent were: Dan Hartman, Hartman Field, Harrisonburg, Va.; Harold F. Wood, Aero Service and Supply, Birmingham; W. Jordan, Aero Insurance, Atlanta; Mr. and Mrs. James Gillespie, Nashville; C. M. Washburn, Honeymoon Island, Florida and Franklin F. Knapp, Outlaw Field, Clarksville, Tenn.

Prominent western names on our register included: "Tex" Rankin and Bob Norswing, Tulare, Calif.; R. G. Lamb, Spokane; Carl Henberg, Salt Lake; C. Gilbert, Bank of America, San Francisco; E. H. Stau and O. A. Hood, Jr., Cherry Rivet Co., Los Angeles; Wm. C. Keeler, Electronic Specialty Co., Los Angeles and Marshall Norling, of the Snyder Aircraft Corp., Denver.

A Westerner carried off the "Sad Pan" contest held one night amid great hilarity. Al Bennett of Pocatello, Idaho, is "Sad Pan" for 1945. Al told an educational story about a polar bear and George Haddaway told one about alligators while Major "Zack" Mosley of CAP and comic strip fame sketched the winning "De-icers" and "Joys." (De-icers and Joys are gals in the comic strip who look better than an ice cream soda on July 4th.)

From a fur piece came C. S. Latham, Canadian Car and Foundry, Montreal, Quebec; Fred A. von Ritter, Republic Aviation Corp. Farmingdale, N. Y.; C. F. B. Roth, Aircooled Motors, Syracuse, N. Y. (He had his picture taken with Susie); H. T. Ailor, Aircraft Services, Bloomsburg, Penna.; Carl Friedlander, Al Bennett, Aeronca, (they gave a pip of an answer to Wesley Prices' Sat Eve Post story; George R. Sorpa, Schwaner Aircraft, Reno; B. H. Applegate, Elastic Stop Nut,

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Newark; Tom Beck of Collier's who said aviation is so busy selling themselves and each other they forget to sell the general public, their market. Bob Morrison and V. Quigley, Collier's, Chicago, signed our book and showed us a singing dog. It did, too.

One of the best cracks at the convention was made by someone who said: "If the fixed-base operators would get off their fixed bases they'd get a lot more business." Humph!

C. M. Edwards, Heath Co., Benton Harbor, gave us his autograph, so did Jerry Greenfield, Mt. Healthy Airport, Cincinnati; Ole Fahlin, Columbia, Mo.; Jim Wheeler, W. H. Stafford and "Doc" Goodwin from Shell Oil. Some other oil people were: Buck Rowe, Gulf, Dallas; S. C. Holman and Milton B. Strauss, Socony-Vacuum and Hale Talbert, Pure Oil.

Asbury Meadows called at the booth. He has taken over the job of running Essair, our first new airline for many years.

After the speeches there were many receptions complete with canapes. Gorden Sleeper of Republic Aviation Corp; L. H. P. Klotz, Luscombe Airplane Co.; and J. C. Welsch of Stinson Division, Consolidated Vultee Aircraft Corp., gave press parties. George Sethman, Adel Precision, set up a hydro-electric bar and Bob Bently asked us over to "see" it. With R. W. Miller, project man on the Republic amphibian, we taxied over. It works, beautifully.

We saw Bob Kenty, Air Associates, Dallas; Bill Morrison, San Antonio; Ellis Gotcher and H. D. Smith, Precision Aeromotive, Houston; Richard Bomberger, Sensenich Bros., Lititz, Penna., and Roy B. Clymer with Wallace F. Ardussi of Romec Pump Co., at various meetings—coffee shops—or doing their daily dozen around the deck.

Ed Nilson and Bill Beaufort of Beech bought us a coke when it was getting real thirsty out one afternoon, and we saw Hart Bowman, Dallas; Bob Heath, Aeronautical Chamber of Commerce, Washington, D. C.; F. Sailor Harvey, Goodyear, Aviation Products Division, Akron; E. K. Stearns, Sherrill Research Corp., Peru, Ind.; Arthur K. Johnson Revere Electric Mfg. Co., Chicago, and H. G. Harris, U. S. Rubber Co., N. Y.

Betty Oliver, SOUTHERN FLIGHT, said she got writer's cramp from giving out information but enjoyed telling how wonderful SF really is to all these and Clarke H. Field,

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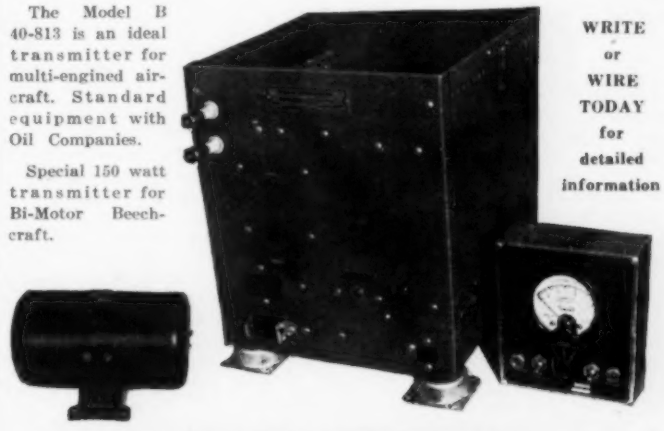

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Aeroquip Corp., Jackson, Mich.; E. H. Holmgreen, Clayborne Distributors, Chicago; Don K. Champaign, Associated Aviation Underwriters, N. Y., and Tom Tynan, Electric Storage Battery Co., Philadelphia, who is a good Joe. He came close to accepting the ADMA presidency, but—too busy.

Other high spots were: checking the rumors about when the Republic plane would be in; how three planes got into the Jefferson lobby; the new four-place Taylorcraft, which is a honey; finding your way back to that place where they had steaks "like this"; seeing the BIG snow flakes; meeting fifty members of the aviation press who report to a million readers what is going on in aviation and what to expect.

The hardest worker we ever saw was Willa C. Ware, who is secretary to the convention committee. Other eager workers who made the convention a success were: Johnny Randolph, general manager of Lambert Field, who "screened" the pilots using the temporary airstrip in Forest Park and Frank Maher, Parks Air College who was in charge of publicity. This here convention was a dude. You'd otta been.

Mission, Texas — *Stormy Wharton reporting.* Tommie Saffold, who was recently discharged from the Army and has been crop dusting down here, is recovering from occupational burns. Crop dusting isn't like trimming a Christmas tree, but cotton, orchards and vegetables sure do thrive on it.

Paul Harris just sold his Aeronca to Harold and Willie Akin and now we have a pair of Akins just achin' to fly. Sam Miller gave over 50 per cent of some land allocated to become the McAllen Miller Municipal Airport, which, rumor hath, yours truly is slated to run. All the Rio Grande Valley pilots are making plans to attend the TPFA meeting in San Angelo. And that seems to be the crop from the Valley of Sunshine.

Oklahoma City—Bill Garthoeffner, who owns Country Club Airport, contrary to previous reports, says it isn't hard to find. All you have to look for is a big patch of yellow, because all the hangars and other buildings have been dunked in yellow paint. Easier perhaps, is to circle the First National Bank, fly a heading of 180 degrees for six miles (count the section lines) get in the traffic pattern and land. Bill will swap lies with you, give you a match, tell you where to get a cigarette and see that you get to town.

Bill says Wiley Post seems to be doing a lively business. Al Guthrie, of Stillwater, Oklahoma, has a new idea in engine exchange. For less than $200 and your old light plane engine he will give you a major overhaul with a ninety-day guarantee. That's all for this time.

Tulsa, Oklahoma—Seven is a natural and the seven test pilots at the Douglas plant just natchally are very "high test". J. C. Carroll is Flight Operations manager, a QB of long standing, gathered up 7,000 hours in fifteen years and is very red on the top. We picked this up from Douglas Airview News, also that: L. H. "Connie" Connell holds a license signed by Orville Wright in person; Robert "Bud" Dieter took his training in a Kittyhawk; Wm. "Bill" Reilly, Jr., University of Texas, is another CPT student who made good; Herb Bartlett used to do stunt work with "Tex" Rankin; Herman Arnsiger has 5,000 hours and Jim Crawford, used to fly for Spartan, flew 3,800 hours in seven years. This adds up to plenty of hours, varied training and lots of testing of the famous planes.

Testing, as you may know, is a two and a half-hour job, minimum, on every ship turned out. Also present are the Flight Engineers who check up on this and that. At Tulsa they are John Louvier, Floyd Evans, Don Roberts, Ken Miller and W. C. Updike. These fellars are sent along with the pilots and dispatched by Al Witwer. Al served months on the Gura-Cairo, African run, way back when. Some fun, ain't?

Kansas City, Missouri — *by Marion Melcher.* Conventions continue to bag Kansas Citians (so do the pheasant hunts and the quail) (yum-yum). Directly after attending the NATA in St. Louis, the Chamber of Commerce's Dick Murray and O. E. Crossey, chairman of the Airport committee, went to a conference called by the mayor of Houston, Texas, to discuss ports of entry for airlines and to promote inclusion of Houston in the pattern of international air routes approved by the Civil Aeronautics Board. . . . Paul Selby of Omaha Aircraft and Jim Thompson and Floyd Fraser of Missouri Aviation were among those who showed up for the conference of the Metals Reserve Company agents in Chicago, a lusty program of the Reconstruction Finance Corporation to help in the disposal of surplus aircraft hardware and primary forms of copper, aluminum and steel.

T. B. Wilson of TWA spoke on Postwar Foreign Commerce at a luncheon attended by the C of C membership, and made some strong points about the aviation picture and what we had to do to elude international "bossism."

War birds hovered on the Municipal Air Terminal several days during the 6th War Loan campaign—such as P-38, B-25, B-17 and B-24's.

Bill Brown, our Airport Commissioner, is not only giving away free advice to sundry delegates from the Southwest (he must have made heaps of friends at the Aviation Clinic!) but he's tucked a group of Wing Scouts under his personal wing and has been lecturing gals —on aeronautics!

Latest news among the women includes our glamourous "Connie" Caraway is co-pilot (as well as wife of the pilot) on the newly formed Airway Flight Service located on Muny. The Kansas City Unit of the Women's National Aeronautical Association is activating its own CAP Squadron, and we'll have a separate Ready Room at the new CAP airport building to be constructed at 40-Highway and Blue. The furniture has been "stored" in the recreation room of the WNAA's Regional Governor, Esther Wirthman, for months. Incidentally, it's all prewar upholstery, so drop in and make yourself comfortable—a few months hence! Finally, a new custom was born with the first installation service of new members at the WNAA, Christmas dinner on the 13th. This is to be a semi-annual affair. At this first installation thirty-five new members were participants. Navy, Marine, Spar and WAC Officers were dinner guests of the Unit as a Christmas cheer gesture.

Birmingham, Alabama—*Edith Wideman Reporting*—As spring inevitably follows winter, Christmas came and went—Egg Nog —the traditional kind—swung Aero Club members and guests into full spirit of the season—best of all was Tony parachuting in via a Kutie Kard—gee, thanks! Eddie Bishop received a present worth congratulations . . promoted from CTM to DTM by Delta—Maybe that came about on account of his handling the brains and stars (ten Generals, no less)—arriving right in the midst of things on Delta's Celebrity Run, Flight 2—Happiest moments of the whole business was experienced by Southern Airways . . welcoming returning men who were former students

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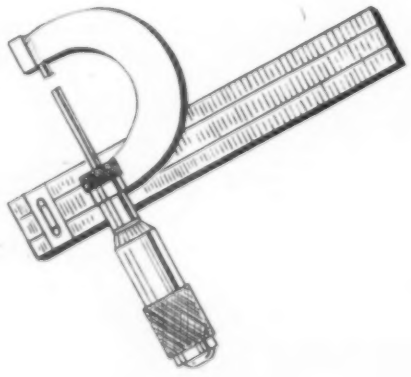

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and employees: Lt. Col. Olin Gilbert, and bedecked with decorations, a Thunderboldt Pilot of many, many missions . . Major Ed Stovall—after months spent in invasions and such like . . Captain Earl Wheeler after twenty-eight months in England. . . . Lt. John D. Wiglesworth, a Mustang Pilot, who was shot down behind enemy lines—taken prisoner —and escaped just in time to spend happy holidays at home.

A P-38; P-51; P-47; B-25; B-17 and an A-T Advance Trainer; another P-47 and B-24 were all flown into B'ham by combat heroes back from various fronts—in connection with the Sixth War Loan Drive—and what a bevy of beauties they had on hand . . hostessing.

Birmingham would have two new airports —under the CAA's billion and a quarter post-war plan—a Class 4 and a Class 2 and every sizable city and town in Alabama would be provided with some sort of flying facilities.

PCA's Oliver Perkins is taking a leave of absence—to rest up—a well deserved one—Perk has worked long and hard at the job—since the opening of PCA's service into BH—Major Harry Jackson's transfer from the Army Air Base—left the military and civilians bemoaning . . Eastern's Expediter Margaret Sparks has expedited herself right back in the University. We'll miss her.

Members of State Aviation Commission, J. B. Carl and Oscar Barney resigned—and the "Guvner" appointed Bob Pitts, Professor of Aeronautical Engineering at Ashburn, and Professor C. H. Bryan (same capacity at the University) to fill these two vacancies—The remaining members of the Commission are Harold Wood and Frank Hulse—Chairmaned by Hayden Brooks.

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Members on its day at the Club—Aviation Teachers of the City High Schools were special guests—Frank W. Hulse, President of Southern Airways, made an informative speech on fixed-base operations and feeder-lines—and what to expect from both in the postwar era—.

All of aviation in these here parts wishes for all of aviation in those there parts—a peaceful and prosperous Year of '45.

Dallas . . . We heard via the sometimes reliable grapevine that Don Marshall received a letter of congratulations from the office of General Hap Arnold with the highest praise for the Lockheed Modification plant. These things being a secret we could get no confirmation, but noticed an expansion of smile on Don's face and notice he takes great pride in his able workers, soooooo, we congratulate him, too.

Of course Dallasites attended the St. Louis convention (look under "St. Louis"), and some others on our handy little register are: Tom Wilkes; Wm. L. Campbell, Weatherly-Campbell; George Jalonick, III, and Harlan Ray, Southwest Airmotive; E. H. Pickering, S. F. and Air Market Data Service; Lou and Jean Foote, Lou Foote Flying Service; and Sandal Dailey, who wraps up words for the newspaper. We took a vote which turned out 100% in favor of St. Louis.

Texas Talk . . . from Fort Worth to St. Louis as members and visitors to the ADMA and NATA conventions came Les and Martie Bowman, Aircraft Sales Co.; W. M. McDonald, Aircraft Investment Corp.; Bill Fate and E. D. McCarter, Aircraft Sales; Lt. Jack Allen, USNR; Roy and Ruth Taylor, Southwest Aircraft; M. M. Taylor and H. P. Termain, Southwest Aircraft; Mrs. John Kennedy, Globe Aircraft, and others who had a good time in five languages.

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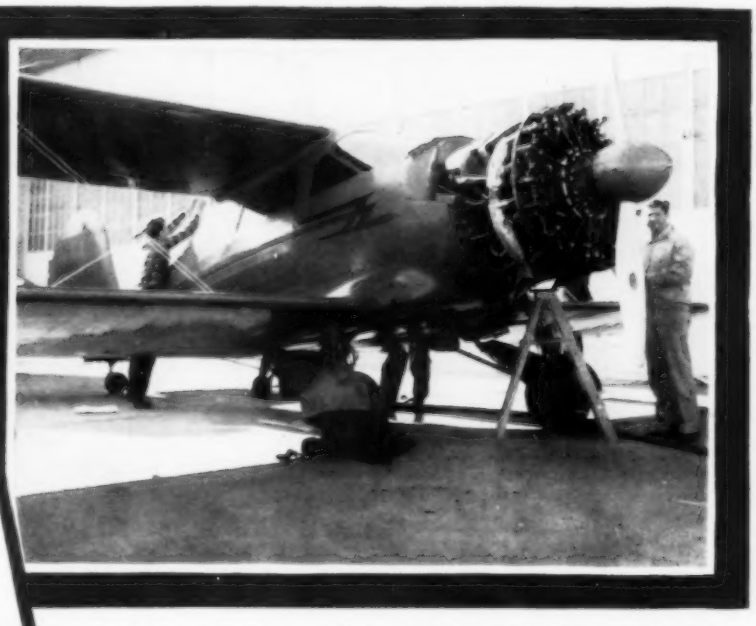

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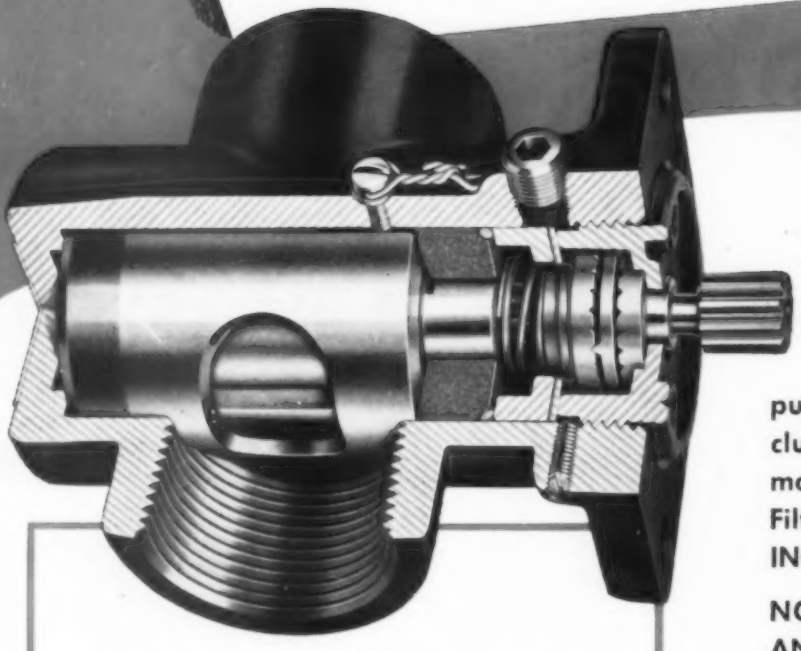
Do you know

THE PUMP ON THE SUPER-FORTRESS?



Rated capacity, 900 G.P.H. at 27.5 volts, 14" Hg discharge pressure, 8" Hg inlet suction, 14.5 Amps. Max. Both ports are tapped 1¼" N.P.T.

• You are looking at a photo of a ¾ cutaway view of ROMEC RD-5530 pump used on electric driven transfer pumping unit RD-6100. This unit includes the transfer pump, the G.E. motor and the Sprague Radio Noise Filter. This Unit is used on the BOEING SUPER-FORTRESS B-29.

NON-CORROSIVE THROUGHOUT AND NOT AFFECTED BY EXTREME TEMPERATURES. Motor is reversible, continuous duty, shunt wound and explosion-proof type. Rated .28 H.P. at 2500 R.P.M. and 24 volts D.C. Complete unit weighs only 13 lbs., 12 ozs. If you want a fuel transfer pump that is unexcelled in manufacturing precision, performance, and reliability, write or wire for details on this RD-6100 unit today.

ROMEC AIRCRAFT PRODUCTS

Romec PUMP COMPANY

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